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Paper Production for Month of October

Statistical Department of the American Paper and Pulp Association States That According to Reports from Members and Cooperating Organizations A Decrease of 5 Per Cent for the Month As Compared With September Was Shown—Wood Pulp for Ten Months Showed 15.6 Per Cent Decrease as Compared With 1930.

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association from members and cooperating organizations, the daily average of total paper production in October decreased 5 per cent under September and 9 per cent under October 1930. The daily average wood pulp production in October was 3 per cent below September 1931, and 10 per cent below October 1930.

Grades Showing Decreases

Compared with October a year ago, the daily average production registered a decrease in the following grades: News print, uncoated book, paperboard, wrapping, writing, tissue, hanging and building papers. Compared with September 1931, the following percentage decreases were registered in the daily average production: News print, 1.5 per cent; uncoated book, 4.8 per cent; paperboard 5.9 per cent; bag, 4.4 per cent; wrapping, 5.8 per cent; writing, 2.7 per cent; tissue, 12.4 per cent; and building, 21.1 per cent.

The ten months' cumulative total of production of paper was 9.5 per cent below the corresponding period in 1930 while shipments were 8.7 per cent smaller than a year ago. News print, wrapping and bag papers have shown improvement while uncoated book, paperboard and writing papers showed practically no change in production at the end of the ten-month period as compared with the end of the nine-month period.

Wood Pulp Production for Ten Months

The ten months' cumulative total of wood pulp production for this year was reported as 15.6 per cent below the level of the same period in 1930.

Total shipments of wood pulp to the outside market was 29.7 per cent below the level of the ten months' total of 1930. Bleached sulphite, mitscherlich sulphite and kraft pulp shipments to the open market were greater than in the first ten months of 1930.

Total wood pulp inventories showed a decrease and at the end of October were 10.1 per cent below the level of October 1930. All grades, excepting news grade and easy bleaching pulp, showed inventories below the level of October 1930.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF OCTOBER, 1931

Grade	Production tons	Shipments tons	Stocks on hand end of month tons
News print	97,117	98,616	31,953
Book, Uncoated	67,358	68,826	45,586
Paperboard	166,221	167,108	56,770
Wrapping	41,808	41,069	46,351
Bag	12,758	12,790	4,928
Writing, etc.	22,234	23,255	43,597*
Tissue	5,700	5,712	3,787
Hanging	3,337	3,541	2,917
Building	5,056	5,058	3,146
Other grades	15,607	16,305	13,510
Total All Grades, Oct., 1931	437,196	442,280	252,547
Total All Grades, 10 Mos., 1931	4,380,258	4,386,568	252,547
Total All Grades, 10 Mos. 1930	4,837,830	4,806,063	267,711

* Revised.

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF OCTOBER, 1931

Grade	Production tons	Used during month tons	Shipped during month tons	Stocks on hand end of month tons
Groundwood	68,112	70,067	1,898	49,616
Sulphite, News Grade	26,500	26,890	92	6,159
Sulphite, Bleached	18,540	15,829	2,716	3,078
Sulphite, Easy Bleaching	2,602	2,437	186	1,346
Sulphite, Mitscherlich	3,264	2,706	869	1,519
Kraft Pulp	26,924	22,493	5,029	3,054
Soda Pulp	13,780	10,592	2,896	2,575
Other Grades	531	518	66	156
Total All Grades, Oct., 1931	160,253	151,532	13,752	67,503
Total All Grades, 10 Mos., 1931	1,684,542	1,541,456	144,855	67,503
Total All Grades, 10 Mos., 1930	1,995,632	1,779,263	206,113	75,104

Japanese Cut Paper Output

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 16, 1931.—Japanese paper manufacturers, beginning September 1, have been observing a 45 per cent cut in output in place of the 35 per cent which has been in effect for some time. Effective December 1, the mills are reported to be considering a further reduction of 55 per cent. The Japan Paper Board Traders Association also announced in September that it would continue its existence for another six months, beginning November 1. October production, it was announced at the same time, would be on a 45 per cent reduction of output basis instead of the 50 per cent rate then in force.

Rush Work On Forest Products Laboratory

$900,000 Building Is Expected to Be Completed in One Year's Time—Farmers Ask Repeal of Law Permitting Wisconsin Valley Improvement Co. to Construct, Acquire and Maintain Dams—Thilmany Pulp & Paper Co. Makes Improvements

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 14, 1931—With excavation completed, the new $900,000 building for the United States Forest Products Laboratory at the University of Wisconsin campus, Madison, will soon be taking shape. Construction is expected to move rapidly, unless weather interferes. One year's time has been allowed to complete the structure.

In general plan, the building will be U-shaped, about 275 feet in length and over-all breadth. It is of modern design, emphasized in its "stepped back" construction, vertical lines and large areas of glass in the external walls. C. B. Fritz & Co., Madison, Wis., have the general contract, and Holabird and Root, Chicago, are the architects.

In its six stories, the building will have 175,000 square feet of floor space, where every possible wood utilization test may be made. Complete paper mill equipment will be installed on a reduced scale for the study of pulp wood and its uses for paper.

Protest Against Dams

Repeal is being demanded by 500 farmers of a law passed early this year by the Wisconsin legislature permitting the Wisconsin Valley Improvement Company, Wausauk, Wis., to construct, acquire and maintain dams, locks, etc., over an area for 66 miles along the Wisconsin river. The company is a co-operative organization supported by all paper manufacturers along the Wisconsin river to control and regulate the flow of water seasonally so there is steady distribution for power purposes and no floods.

Similar privileges were given the company further north by a law enacted in 1907. The new law took in the remaining territory south to Wisconsin Rapids, Wis., where the mills of the Consolidated Water Power and Paper Company are located. The farmers appear to have acquired a sudden fear that the building of a dam on the Eau Pleine river, a tributary of the Wisconsin, would flood their lands. The fact that the law applies to 3,125 square miles of territory also looked terrifying to these land owners. They have visions of water backed up over their entire farms, despite the fact that the Wisconsin Public Service commission controls permits for new dams or other projects. The legislature is now in special session and an attempt will be made to force repeal of the law.

Completing Construction at Thilmany

Another month will see construction work practically completed at the Thilmany Pulp and Paper Company, Kaukauna, Wis. An extension one story high is being made in the machine department and it will be 43 by 280 feet in size. Immediately after its completion, erection of a new paper machine will be started. The other unit is a warehouse enlargement 80 by 216 feet in size, for storage and distributing of the larger volume of stock to be made by the mills. Permanent Construction Company, Milwaukee, is putting up the buildings.

Staggering Employment

Twenty industries have responded thus far in the movement headed by F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, Neenah, Wis., to stagger employment or adjust the days and hours so as to give jobs to more men. This agreement was reached with Gov. Philip F. LaFollette by resolution, and is being put into effect wherever possible. A number of paper mills already had been using this system and others are responding as fast as their crews can be shifted to various jobs so they will be able to relieve others off duty.

Unemployment insurance probably will be the next new labor venture the paper mills will have to consider. A law has been introduced at the special session of the Wisconsin legislature requiring industries to adopt a voluntary system within the next two years or submit to a compulsory one set forth by the state. The plan is to require an unemployment reserve fund to be built up by allotting two per cent of the monthly payroll until the fund reaches $55 per man. A reduction may then be made to one per cent until the fund is $75 per man, after which no further additions need be made. Payment to employes is to start after they have been idle two weeks through causes not of their own making and they will receive benefits of the fund for approximately six weeks. The funds must be invested in trust fund securities until needed. The bill is sure to pass the assembly but may find opposition in the senate.

Funds for Fighting Fires

There has been appropriated to the state of Wisconsin by the federal government $47,453 for forest fire fighting in federal preserves during 1932. With state and private funds, the total available will be $404,225. The funds will be more adequate than at any previous time to meet the situation which has caused the largest annual timber loss.

During the past fiscal year, Wisconsin land owners received $171,551 from the government in payment for lands acquired within the three federal forest purchase units, the Flambeau, the Moquah and the Argonne. The U. S. forest service also spent $400,000 in these units for building roads, telephone lines, lookout towers, warehouses and other improvements. Motorized equipment for planting and protection from fire drew additional expenditures of $35,634.89. These figures were anounced recently by E. W. Tinker, Milwaukee, chief forester of the Lake States region.

Atlas Tag Co. Formed

The Atlas Tag Company has been formed at Neenah, Wis., to manufacture, sell and distribute tags, gummed labels, gummed tape and all other kinds of tags and labels. The company is incorporated at $25,000, with 250 shares, par value $100 each. Incorporation papers are signed by Attorneys F. F. Wheeler and Raymond P. Dohr, and by Merritt M. Bacon, all of Appleton, Wis.

Must Use Wisconsin News Print

Whether the newspaper selected as the official paper of the state to publish legislative proceedings and other such notices must use news print made within Wisconsin will likely be decided by the present special session of the Wisconsin legislature. An investigation was ordered as to whether The Capital Times, Madison, Wis., the official paper, is using Wisconsin-made paper or is importing it

from Canada. Legislators intimate home products will be insisted upon as a policy during the unemployment era.

Unemployment Relief

Employes of the Badger Paper Mills, Inc., Peshtigo, Wis., set an unique example in the matter of unemployment relief by volunteering one per cent of their pay in January, February and March to the welfare and relief funds being raised at the neighboring city of Marinette, Wis. The total amounts to $1,600 and is to be used to pay wages of five men employed full time at the Peshtigo mills. These men will not displace others, but will work at odd jobs at a fair wage until April 1 next. This action was taken because the Badger employes have been enjoying full working schedules at good wages and felt they should help a community less fortunate than Peshtigo.

Wisconsin Rapids a Model City

Due to the efforts of the Consolidated Water Power and Paper Company to keep as large a number of men as possible employed, the city of Wisconsin Rapids, Wis., is pointed to by the Wisconsin Carpenters council as the outstanding city in the state for working conditions. Practically no unemployment exists there.

Forestry Congress Meet

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, Dec. 14—Delegates to the Forestry Congress held in Cincinnati last week honored Alexander Thomson, president of the Champion Coated Paper Company, Hamilton, by electing him on the National Board of the Central States Forestry Congress. Mr. Thomson is president of the Congress and as such entertained the delegates at the Hamilton mills, at the conclusion of the business session.

Guy Randall, an official of the Champion Coated Paper Company, in his address before the Congress spoke on the subject, "Steam Pulp for the Production of Ground Wood Pulp".

At the final sessions, the following resolutions were adopted:—

"That the Congress of the United States be requested to have studies made of soil erosion and run-off water on non-agricultural and marginal land of the Mississippi watershed.

"That agricultural schools of the Central States be asked to take over lands reverting to them for tax delinquency and make them into state forests.

"That the Central States governments be asked to make land classification surveys to determine the proper use of lands.

"That conservation of natural resources be urged as a part of the curriculum of the schools."

Members of the paper trade were gratified that one of their number should be nationally recognized in the conservation of America's forests and the reforestation plans which have engaged the attention of the Government and paper manufacturers for many years.

The writer recalls visits to Upper Michigan 30 years ago when the forests were dense and timber rights were of inestimable value. A recent automobile trip was made through this very section, with only second growth trees in sight for a distance of 50 miles. The same was true in the Upper Peninsula and on around through Wisconsin, where a modern paved road penetrates what was once a magnificent forest. Never in this generation will those states retrieve their lost prestige, but with such work as the Central States Forestry Congress and similar organizations, future generations will benefit.

Demand Slow in Indianapolis

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., December 14, 1931—As this is written most of the purely holiday business is over and naturally trade is not as brisk as it was during the last half of November and the first third of December. The jobbers, however, are not depressed, for this is a condition that all had foreseen.

The volume of paper products sold for the holiday trade was not out of the ordinary, but it was about what the trade had expected in view of present conditions. Prices continue low and there is a weakness in the price situation now that bodes little good for the industry when it comes to signing contracts.

Just now the local jobbers are giving a lot of attention to collections. The situation is no worse than it was this time last year, according to some. This condition is due in part to the increasing care the jobbers are taking in the granting of credits, their efforts to make collections and to the fact that users are buying in small quantities and a greater proportion of them paying cash on delivery. The tendency is not to push creditors too hard if there is any disposition to pay at all.

Board mills in this state are working three and four days a week and are bending their production to the demand. No large warehouse stocks are being built up and none will be until the general economic situation shows considerable improvement. The manufacturers say they are getting more inquiries now than they did the same time last year, but the buyers want board products at a price that will leave the manufacturer little, if any, profit.

Paper stock men here say there is no demand. Even with prices paid for paper stock and rags the lowest they have been for years, the mills are taking little.

I. F. Kahn, president of the Capital Paper Company here has announced the completion of the Indiana wholesale organization for electrical appliances as a division of the Capital Paper Company. For several months the company has been a distributing agent in this state for radios, but now it is planned to make a sales division to include most of the electric appliance field.

Dryden Paper Co. Report

The annual report of the Dryden Paper Company, of which J. H. Acer, of Montreal, is president, has just been issued, and shows a reduction in earnings in accordance with the year's slump in business, but the period's bond interest is fully covered, with a moderate addition to surplus, before, however, provision for depreciation and depletion. Working capital is also lower.

Operating profits for the year were $77,939. against $177,053 in the period ended September 30, 1929. Other revenue amounted to $10,198, making a total net revenue of $88,137, against $189,260 in the preceding year. Interest accounted for $82,827, leaving a balance of $5,310, before provision for depreciation and depletion. This amount, added to surplus, brought the profit and loss balance up to $162,439, as shown in the balance sheet. In the preceding year, $100,000 was set aside for depreciation.

Current assets at $830,895 compare with $891,997, and current liabilities at $54,678 with $41,860, leaving net working capital at $776,217, against $850,137 at the close of the preceding year. Balance sheet shows the following: Inventories, $562,171, against $678,736; investments, $145,383, against $53,276; properties $4,987,052, against $4,951,617, and total assets at $8,135,275, against $8,119,051. Liabilities show little change, the main one being the new item of $17,000 in call loan payable.

Philadelphia Demand Shows Improvement

Orders, However, Continue More Especially for Immediate Consumption—Board Mills Get More Business and This Is First Noticeable Improvement in This Section of the Market in Over a Year—Moore & White Get Contract

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., December 14, 1931.—Growing demands for the holiday supplies of merchants and some buying in advance of the new year keep the paper industry, locally, active. Though orders are more frequent than they were a fortnight ago there still is limitation to stocking on the part of consumers in the immediate vicinity. Orders among the mercantile industries are of the hand to mouth type to tide over the holidays. Little attention is given to stocking ahead among such consumers. While the local wrapping paper dealers are experiencing this sort of trading the mill representatives in the fine paper section report a fair volume of demand under contract for the coming year for the book papers and better grades of writing papers and bonds. There also has been broadening of distribution among the distributors of fancy box makers papers. Board mills are enjoying increased business. This is the first improvement in the board situation reported in over a year and with prices as follows for the Philadelphia industry as against those for other sections of the country: Standard chipboard, Philadelphia and up State Pennsylvania $25 while New England prices are $27.50 as reported by the Box Makers Association and for New York and radius of 50 miles $26; Standard news board, Philadelphia and Up State Pennsylvania, $27.50. New England $27.50 and New York and radius of 50 miles $26 against the price of $30 asked elsewhere. Standard single Manilas, generally, are $37.50 and standard test jute liner $32.50.

Converters of paper products in sheets and rolls are in the market for larger volume of papers which local concerns are buying in volume at the lower prices of the year end in anticipation of the new year's demands and the higher prices which are predicted as business grows.

Paper stocks are draggy, mills confining orders to small quantities, but the wholesalers of paper stocks look for the broadening of mill demand after the first of the year. Few accumulations of the better grades are available and the dealers look for shortage of these raw materials when buying is under way in the coming year with higher prices resulting from the dearth of stocks on hand.

Goldman Paper & Stock Co. Buys Large Tonnage

Harry Goldman, president of the Goldman Paper & Stock Company, wholesale converters of papers, returned from a swing through the Pacific Coast mills on a buying expedition which took two weeks. It included a tour of the pulp and paper mills in California and Oregon, when he made purchases of 1,000 tons of various grades of papers. The purchase will be shipped here to the headquarters of the converting department at 3rd and Wood streets and converted into rolls and sheets for the paper trade and converters of paper goods. The 1,000 tons include a variety of papers, both fine and coarse grades. The Goldman Company has an extensive converting department which turns out tonnage lots daily.

Moore & White To Supply Screen and Winder

Moore & White, 15th street and Lehigh avenue, have contracted to install in the new plant of the Champion Fibre Company at Canton, N. C., the screen, winder and slitter on electric drives to be constructed on the machines being built by the Pusey & Jones Company. The Moore & White Screen is a 24 plate rotary type. The paper making machines to be built by the Pusey & Jones Company in the Canton plant, will be used for the production of book papers, with a major output of 150 tons in 24 hours. The winder and slitter on electric drives will be equipped with S.K.F. ball bearings throughout. The paper running speed of the machine is to be 2,100 feet per minute.

General Electric Drives For Champion Fibre Co.

The Philadelphia offices of the General Electric Company have been awarded the contract for the paper machine to be installed in the Champion Fibre Company plant at Canton, N. C. The paper machine to be constructed by Pusey & Jones produces 242 inch width of book paper. This machine will be operated by G. E. sectional drive using moderate speed motors with Falk speed reducers of the herring-bone type. The drive employs the new Selsyn tie-in for the sectional in conjunction with a master Selsyn operating a carbon pile rheostat in the section motor field circuit. The differential speed Selsyn is so arranged that the important feature of uniform speed regulation is obtained at all speeds. The inherent characteristics of a D.C. machine give a greater difference between no load and full load at the minimum feet per minute on the machine than at maximum feet per minute paper speed. The arrangement of the differential Selsyn compensates for this characteristic. The Jordan motors are G. E. synchronous type while the beater and auxiliary motors are also being furnished by the General Electric Company. The screens are driven with G. E. motors through a Morse chain reduction drive.

Paper Manufacturers Co. Extends Gummed Dept.

Having recently perfected a high grade gummed sheet department in its new converting department, the Paper Manufacturers Company, 5th and Willow streets, has been expanding its production owing to the growing demands made on the firm for these products. The absolutely flat gummed papers are made for labels, lithographers and printers in all sizes. They are marketed under the Paper Manufacturers Company's own mark of Perfection as are its lines of gummed sealing and stay tapes. The flat gummed papers augment the line of tapes and stay papers which have been in production for about a year under Kraft Weld and Perfection marks. These flat gummed papers are also made for paper dealer supplies.

Aatell & Jones, Inc. Elects Officers

Following the passing of the late head of Aatell & Jones, Inc., 1314 S. Howard street, in late November, there has been election of officers in the firm. George J. Byrnes, former treasurer of the firm, has been elected president, Leonard Rice, vice president, Mrs. H. M. Jones, treasurer, and J. F. McFerren, secretary. New officers are vice president Rice who was formerly on the board of directors and Mrs. Jones, widow of Willard E. Jones, late president and general manager of the company, manufacturers and converters of paper products.

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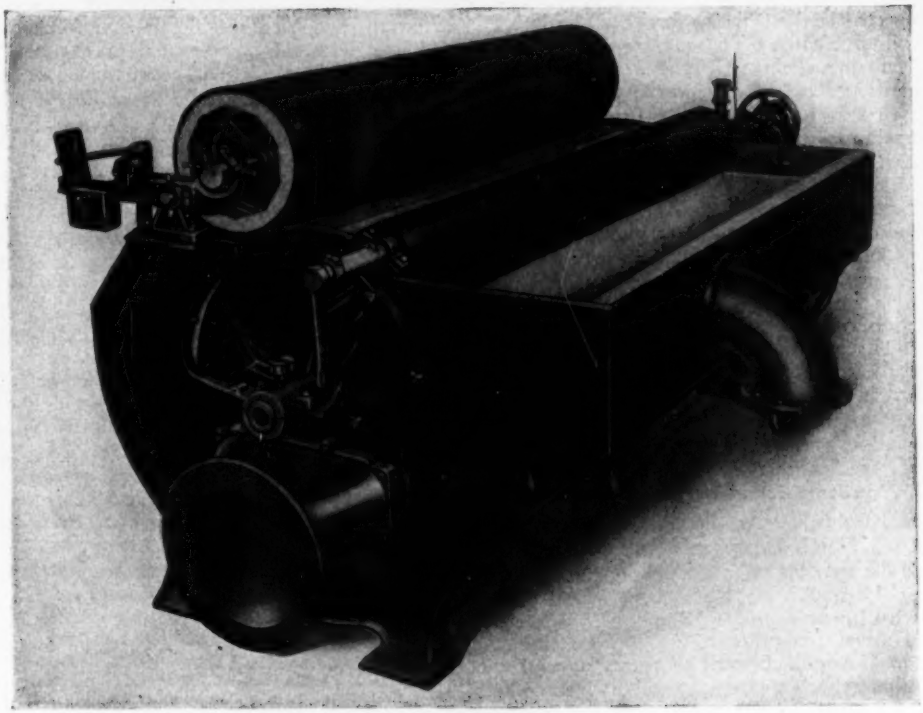

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Paper Conditions Slow In Chicago Territory

Price Reductions Are Taken Philosophically—Dealers Are Inclined to Put Off Quantity Buying Until After the Inventory Period—Speakers at Meeting of Paperboard Industries Association Give Some Sound and Timely Advice

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, December 14, 1931—The news print break was more or less expected in the Chicago territory and is being taken rather philosophically. The rag content drop was more of a jolt but philosophy will have to continue to be about the best antidote for this market, also. Conditions in other lines are still reported slow. Sales representatives having occasion to travel in near-by mid-western territory report that the slowness prevails there likewise. Salesmen are finding jobbers and dealers rather uninterested in new lines, for the most part, and anxious now to refrain from quantity buying until after inventory period.

Kraft prices have done little or no worse during the past week and the market continues to be strictly a buyers affair. Fine papers are practically the same as last week with the exception of the rag content cut. Book and cover papers follow the same trend. A somewhat unexpected increase in holiday business will further deplete stocks of tissues, glassines and wrappings, say reports, and may help business after the first of the year. The waste market is dull and is expected to continue so from now until at least after the first of the year according to reports.

Paperboard Industries Meet

The Paperboard Industries Association, with its national headquarters at 608 South Dearborn Street, Chicago, has recently released the summarized report of its annual meeting held in New York City on November 19 and of the group meetings held on November 18 and 19. While the trade press has already commented on this meeting the paper industry itself would do well to scurry around and get a copy of this report containing not only some fine discussions on the paper board industry but viewpoints that are of unusual interest to the entire paper industry.

The most effective part of the remarks made by Julius H. Barnes are included along with the statement that "if ever there was a time when industry should be organized with a cohesive and well directed central body, it is today." The address by President J. H. Mcleod, of which excerpts are printed, was one of the outstanding addresses of the meeting. Discussing the future of the paperboard and fiber box business, he pointed out that the last U. S. Commerce report showed a relatively high percentage of operating activity—for both solid fiber and corrugated box manufacturers for September, 1931 of 79 per cent against 73 per cent last year, with 553,000,000 square feet of production against 506,000,000 square feet for September, 1930.

In addition to the very interesting and concise group reports, discussions pertaining to anti-trust legislation, proposed local meetings and cooperation with paper stock dealers were of unusual interest to the trade in general.

Vice-President Schmidt reported in detail regarding conferences with paper stock dealers, in an effort to arrive at specifications governing the purchase and sale of paper stock. He submitted a set of proposed specifications for grades of waste paper including 24 separate classifications, proposed standard definitions and proposed suggestions for arbitration.

The presentation was received with interest and members were generally very much in favor of adopting a proper set of specifications. The understanding reached was that after members have had an opportunity to review the proposed specifications, a further conference will be held with the committee representing the paper stock dealers, after which it is hoped that a set of specifications may be adopted for use by the industry.

Unemployment Relief

The paper and stationery division of the trades groups now working hard and long in an effort to raise $10,800,000 for the relief of the unemployed in Chicago, have been unusually successful in going over their quota. The paper and stationery group had a quota of $50,000. At the present time this group has subscribed $86,155.65, going well over its quota to the tune of about $36,000. P. H. Bull of Bradner, Smith & Co. was in charge of the paper and stationery division and, according to reports from the headquarters of Governor Emmerson's Relief Commission, has done an exceptional job. A large number of the paper houses located in Chicago, and jobbers and mill representatives of firms in all parts of the country responded generously. Allied groups have also exceeded their quotas in many instances. On December 9 the open-shop printers, with I. A. McKenna as chairman, exceeded its goal with $106,663 or 112 per cent while the chairman of the advertising and publishers' group, C. C. Younggreen, announced that his group had raised $163,545 or 125 per cent of its quota.

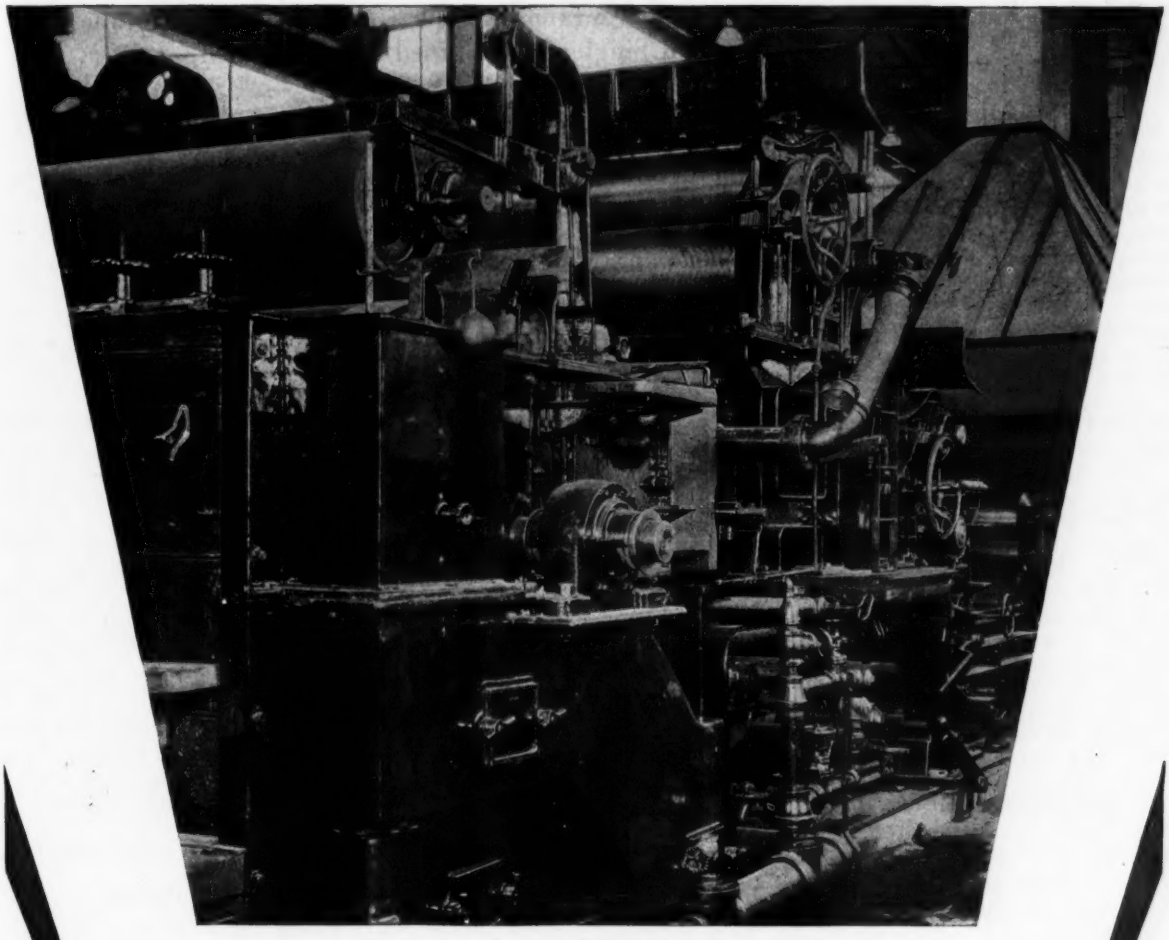
Chicago Paper Association to Meet

At the Tuesday, December 22, meeting of the Chicago Paper Association new committee appointments for the ensuing twelve months will probably be made by the newly elected president W. E. Beier of Beier & Co. The dinner meeting will, as usual, be held at the Bismarck Hotel. At that meeting the Chicago Paper Association also expects to formulate its program for the year, a program which will undoubtedly feature a continuation of the study of costs of doing business which has characterized the Association program for a number of years. With conditions in the coarse paper market as they are the association announces it will continue urgent efforts to improve business conditions in the market, to elevate the standards of the group just as much as possible in order to insure a fair profit to each individual member.

To Fight Postage Rate Increase

The Chicago Association of Commerce, the Illinois Chamber of Commerce, the Illinois Manufacturers Association and other civic groups of considerable influence have joined with the various trade associations affected in fighting against the proposed increase in the postage rates on first class mail as suggested by the Post Office Department as a means of wiping out the deficit. Increasing charges on first class mail are, say these groups, a means of inflicting genuine hardships on thousands of business firms who depend upon the mails for securing much of their business. Such an increase, it is said, would also be harmful to business concerns, already hard hit, who supply the materials for mail campaigns, etc.

DOWNINGTOWN



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Boston Paper Demand Holds Up Fairly Well

Inventory Period Affects Sales To A Considerable Extent—Manufacturers of Writing Papers Report A Fair Business—Transactions in Wrapping Papers Are of Average Volume—Reductions in Chip and Single Manila Lined Not Welcomed

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 14, 1931.—The volume of wholesale paper business has averaged at least fair during the last week. The inventory period has naturally affected the amount of sales to a considerable extent. On the other hand, orders for holiday purposes are still coming in, including the demand for greeting card material from publishers. Many people, according to reports as well as a general feeling, will make Christmas remembrances by greeting cards alone this year, contrary to their usual custom of giving substantial gifts, and this business, coupled with that for greeting cards to accompany gifts, is expected to make, in the aggregate, a considerable volume of sales. The box paper demand is better in some quarters, at least. Road salesmen note that the competition among box manufacturers has tended towards lower prices for supplies, such as fancy papers.

A medium amount of bonds and ledgers is moving. Manufacturers and dealers in writing papers report a fair business. Orders from printers, largely for direct mail advertising purposes are continuing in a fair volume and wholesalers hope for more after the turn of the year. At least an average amount of business is being transacted in wrapping paper.

The reduction in prices of chip and single manila lined chip in the box board market is naturally not welcomed by sellers, but is apparently a result of prevailing conditions. Chip board is now quotable at $25.00, against a former price of $27.50, f. o. b., Boston, and similarly, single manila lined at $35.00, compared with a range of $40.00 @ $45.00. Box board is reported generally quiet. Paper and box board specialties are moving fairly well.

Paper Stock Market Continues Dull

The paper stock market continues dull, with a number of declines recorded. Some are quoting kraft No. 1 as low as .85 @ .95. No. 1 mixed paper is now at .20 @ .22½, compared with a previous range of .25 @ .35, and old newspapers at .27½ @ .32½, against .32½ @ .40. Foreign gunny bagging is down to 1.15 from the previous figure of 1.25. There is considerable roofing stock on hand and prices have taken a further descent. The No. 1 grade is now quotable at .48 @ .52, against a former price of .63; No. 2 at .43 @ .48, against .58, and No. 3 at .38 @ .43 against .53.

Carter, Rice & Co. Activities

John Carter & Co., Inc., are sending out to the trade folders of White Cloud Bond, a new high-grade sulphite, and also another new line, Rockledge Bond, which has an old fashioned cockle finish. The former is stocked in the Boston warehouse of the company. Rockledge Bond, made by the Millers Falls Paper Company, Millers Falls, Mass., is manufactured in white and ten distinctive shades and is a rag content product.

Carter, Rice & Co., Corp., have had some gratifying returns from a folder of Herculean Cover, issued as a follow-up in the campaign of the American Writing Paper Company. A business reply card, on which is a request to send the new "Suspension Bridge" sample book of Herculean Cover, makes up part of the folder. This cover is made in white and thirteen attractive colors.

Carter, Rice & Co. are distributing an attractive sample book which demonstrates the new Cragbourn four-side deckle-edge papers, manufactured by the Hurlbut Paper Company, South Lee, Mass. The paper is made in two sizes, 11½ x 17½ and 13 x 19½, light and heavy weights, in a range of colors, with envelopes to match, which take both size sheets, when folded in French fold style. Considerable interest has been shown in this paper, it is stated at the office of Carter, Rice & Co.

General Trade Notes

Stanwood H. Cook, connected with the board sales division of the Robert Gair Company, with headquarters in Boston, and Miss Ruth J. Sessions, of Briston, Conn., were married Saturday, December 12. Mr. and Mrs. Cook have the best wishes of all.

The Collins Manufacturing Company, Holyoke, Mass., are making improvements on their power plant.

Charles W. Dorr, 41 years bookkeeper for the Spaulding & Tewksbury Company, box board dealers, has become a grandfather. The name of his granddaughter is Virginia Elizabeth Swett.

The Stone & Forsyth Company are open Saturdays until 3:30 o'clock during the Christmas season.

M. Zamansky & Sons, Inc., Chelsea, Mass., have incorporated to carry on a bag and burlap business. There are 1,000 shares, $50 each. President and treasurer, Michael Zamansky, 1184 Chestnut street, Chelsea, and Israel Zamansky.

Get Patents on Regulators

The United States Patent Office, recently, allowed 15 claims on the Apmew Recording Paper Stuff Regulator and the Apmew Recording Consistency Regulator. Allowance of these 15 claims give unusual patent protection to the Apmew Regulators, as claims cover all their novel features. Consequently, paper mills desiring accurate regulation of paper stuff can be assured when they purchase Apmew Regulators of the full protection of the U. S. Patent. Patents have been applied for in Canada, and patents are pending in foreign countries.

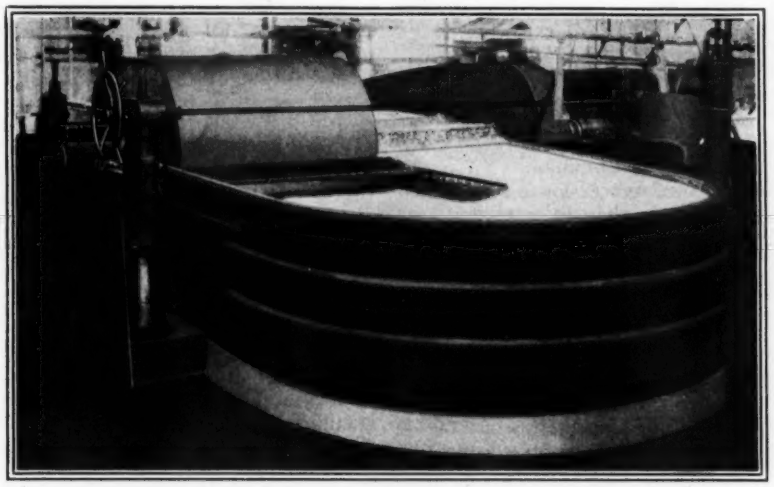
Apmew Recording Paper Stuff Regulator includes four operations in one machine, namely: uniform consistency regulation; uniform quantity regulation; uniform water regulation; and recording consistency gauge.

"Apmew Regulators have demonstrated unusual accuracy and exceptional dependability. These regulators are simple in design and construction, and have a minimum of moving parts. Because of this simplicity, there is practically nothing in the mechanism to get out of order. Also because of this simplicity Apmew Regulators will give a long life of dependable, accurate, and valuable regulation to the users.

The American Paper Machinery and Engineering Works look forward to a large volume of business with this addition to their line.

The World's LOWEST PRICE Beater

Pulping Engines
•
High Speed Holland and Niagara Beaters
•
Wood Fillings



Breaker and Laboratory Beaters
•
Washers
•
Beater Bars
Bed Plates

THE world's lowest priced beater is one which is low in *operating* cost as well as *initial* cost. It is a beater that is designed by technical men who understand the job the beater has to perform . . . . a beater that requires the lowest horse power per ton of stock beaten . . . . a beater that is lowest in maintenance cost . . . . a beater that gives dependable service over the longest span of years. The Valley Iron Works Company have a diversified background of beater building experience and a staff of capable engineers which enable them to build *such* beaters.

VALLEY
Equipment for Paper and Pulp Mills

Plant: Appleton, Wisconsin
New York Office: 350 Madison Ave.
Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

Ontario To Stabilize News Print Industry

Government Renews Efforts Begun Last Summer to Start Mills Now Idle and to Speed Up Operations of Some Mills That Have Been Running—Officials Will Make Every Effort to Get Mills Operating as Close to Capacity as Possible

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 14, 1931—Vigorous renewal of the Ontario Government's efforts of last summer to stabilize conditions in the news print industry was launched this week at Queen's Park in Toronto during a conference between Hon. William H. Price, Acting Premier; Hon. William Finlayson, Minister of Lands and Forests; Hon. Charles McCrea, Minister of Mines, and some of the leading pulp and paper operators in the Dominion. No statement was issued from the conference nor had Colonel Price any comment to make, other than to infer that out of the negotiations there might arise some early operations of news print mills now idle, and a speeding-up of plants that have been running. This improvement program, if effected, will apply, it is understood, to mills in all sections in Ontario. Now that the relief program of work in the north country has been got well under way, Ministers, such as Hon. Mr. Finlayson and Hon. Mr. McCrea, are free to tackle the news print situation from an employment standpoint and are said to be impelled to do everything in their power to get all of the news print mills operating again as close to capacity as possible, with a view to relieving unemployment conditions. It is stated that there will be several other conferences between the mill operations and the Government before a definite program is outlined.

Headquarters Moved to Sault

Headquarters of the Ontario Government Flying Service, charged with the protection of northern Ontario's pulpwood limits, has been moved from Queen's Park in Toronto to Sault Ste. Marie, where Capt. W. Roy Maxwell, Director of the force since its inception, will reside in future. The shift has been under contemplation for some time, as it will tend, it is understood, to promote an even greater efficiency than now obtains in the administration of the force. All records and equipment now at the Parliament Buildings will be transferred to the Sault with the departure of Capt. Maxwell. The service will still come under the jurisdiction of the Forestry Branch, although, necessarily, contact with the Queen's Park authorities will not be as immediate as heretofore. All last summer Capt. Maxwell spent at the Sault and it is at his request that the headquarters have been changed.

Campbell Wins News Print Suit

After years of litigation, Charles E. Campbell, newspaper publisher of Edmonton, Alberta, is entitled to collect the sum of $50,000. The appeal of the National Trust Company, acting as the executor of the late E. A. Wallberg, of Montreal, against whom Campbell brought action, was dismissed at Osgoode Hall, Toronto, by the court presided over by Chief Justice Mulock. Campbell brought action some years ago against Wallberg, claiming he was entitled to commission of three per cent, on a contract made by the Lake St. John Pulp and Paper Company, controlled by Wallberg, to the Newspaper and Magazine Corporation of New York. Campbell based his action on a meeting which he said he had arranged at the King Edward Hotel in Toronto in April, 1926, where he introduced Wallberg to Lester J. Clarke, of the New York Corporation. Wallberg had made a verbal contract to pay commission on any sale that resulted, it was alleged. As a result of this meeting, Campbell said, the Newspaper and Magazine Corporation had agreed to purchase the entire output of the St. John mills for ten years, which would eventually bring the Wallberg company $40,000,000 worth of business. Campbell sought $1,200,0000 or three per cent commission as the paper was delivered. Justice McEvoy found that he was entitled to one per cent. Justice McEvoy's order was varied by the appeal court of Ontario which ruled there was no evidence of a specific commission and awarded Campbell $10,000 for his services. On his appeal to the Privy Council Campbell was found entitled to $50,000.

Improvements at Don Valley

Almost a complete renovation of the plant has taken place of late at the Don Valley Paper Company's premises in Toronto and the work is now practically complete. The heating system of the mill has been all changed over and new switches and motors have been installed, according to Superintendent MacKenzie who has personally been supervising the work. All of the machines and the interior of the building have been overhauled and the power system improved. N. E. Wainwright, head of the concern, states that his company has had a very fair year and that he is getting the plant in shape in anticipation of added business next year. A section of the mill is devoted to the manufacture of blotting paper for an outside firm. The manufacture of hand-made papers, which was started some months ago, has been dropped for the time being.

Specially Made Paper for Government

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 16, 1931—The Bureau of Engraving & Printing purchased 9,820,000 pounds of specially made paper during the fiscal year ended June 30 last according to the Treasury Department.

Internal revenue stamps such as those affixed to cigarettes and playing cards called for more paper than any other class of printing, using 5,284,696 pounds or 84,800,380 sheets and 388 rolls; even paper money, which called for 2,143,224 pounds, required less than the revenue stamps, the information shows. Additional information made available follows:

The distinctive paper used by the Federal Government for its money, stamps and checks is manufactured by contracting firms under the direction of officials of the Treasury to insure fulfillment of specifications. This paper is received by the Paper Custody Division of the Public Debt Service which dispenses it to the Bureau of Engraving and Printing, holding this Bureau accountable for each sheet delivered.

Paper money, of which large amounts have been issued this past year, called for more than 84,841,000 sheets of the special currency paper to de delivered to the Bureau of Engraving and Printing during the last fiscal year. Postage stamp paper amounted to 2,092,525 pounds. United States bond paper totaled 30,860 pounds and paper for checks amounted 203,856 pounds.

Steam Costs Will Be Watched This Winter!

If you have any reason to expect excessive steam costs in your mill, why not consider the advisability of avoiding them. It is possible that for a comparatively small expenditure, you can secure savings greater by far than the cost of the needed equipment. Our experienced engineering service is ready to help you determine whether or not additional apparatus can prove a paying investment for you this winter. Consult us now—before cold weather strikes.

ROSS BRINER ECONOMIZER
ROSS VAPOR ABSORPTION
ROSS GRINDER EXHAUST
ROSS - WAGNER RECOVERY SYSTEM
FANS - BLOWERS
UNIT HEATERS

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311 Lewis Building PORTLAND, ORE.

ROSS ENGINEERING OF CANADA, LIMITED
NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

New York Trade Jottings

Thos. J. Burke, of the American Paper and Pulp Association, returned last Saturday from a trip to Massachusetts and Potsdam, N. Y.

* * *

The American Paper Tube Corp., has filed articles of incorporation with the Secretary of State at Albany, N. Y., with capital stock placed at $20,000. M. Meyer, 10 East 40 street, New York, is mentioned as representative.

* * *

Frank Purington, vice president, has appointed the following Program Committee for the annual luncheon and meeting of the Salesmen's Association of the Paper Industry: P. H. Bull, chairman; W. L. Raymond, E. M. Cree, C. I. Gordon, and W. J. Mueller.

* * *

H. Merton Joyce, vice president and manager of sales of the Great Northern Paper Co., 342 Madison avenue, New York, announces that James T. Mix has become associated with the Great Northern organization with headquarters at its New York office.

* * *

The Federal Trade Commission has dismissed a complaint against Bond Bros. & Co., Inc., New York, involving alleged methods of competition used in connection with the sale of baled newspapers for use in place of wrapping paper, in export trade.

* * *

The Whiting-Plover Paper Co. announces the appointment of J. B. Card & Paper Co., 24-26 Mechanic street, Newark, N. J., as distributor of International Bond. Full warehouse stocks of the white and all colors of this rag-content, loft-dried paper will be carried by J. B. Card & Paper Co.

* * *

The resignation is announced by the Import Committee of the American Paper Industry of Mrs. L. E. Miller, who as Miss C. Lucile Tanner came to the organization when it was founded in 1924. From an experiment in the industrial field she has seen the Committee develop into an organization whose successful activities have challenged the admiration of American industry, and she was by no means an unimportant cog in the machinery by which the Committee made itself an outstanding function of the paper industry.

* * *

A. W. Blackman, of the D. F. Munroe Co., Boston, Mass., president of the National Paper Trade Association of the United States, spoke on Tuesday at the weekly luncheon of the Salesmen's Association of the Paper Industry at George's Restaurant, 507 Lexington avenue, on the "Attitude of Paper Merchants Toward Paper Mills." Mr. Blackman's address was exceedingly interesting and was listened to with close attention throughout. J. A. Quinlan of the St. Regis Paper Co. is scheduled to speak at the luncheon next week on recent freight rate changes in the paper industry.

* * *

Thos. J. Burke, director of the Cost Department of the American Paper and Pulp Association, addressed the Connecticut Valley Cost Division of the Association last Tuesday at Springfield, Mass., his subject being "The Necessity for Uniform Cost Methods in the Pulp and Paper Industry." An interesting discussion took place following address in which Mr. Burke referred to the uniform accounting plan published for distributors by the National Paper Trade Association as well as the work now being done to draw up a uniform accounting plan for manufacturers based on modern methods.

* * *

According to a report just made by the Import Committee of the American Paper Industry, the dockets of the United States Customs Court have recently been cleared of many long standing cases by the insistence of the Court that cases be tried or dropped. As a result, many cases involving paper have been abandoned by the importers, who were unwilling to go to trial. Among these cases were: Thirty-two cases involving an advance of 10 per cent in the duty on boxed stationery. Sixteen involving envelopes held subject to an additional duty of 10 per cent for special finish were also abandoned. A long series of cases, involving 134 importations of envelopes for greeting cards, has been abandoned, as a result of a test case reported some time ago.

* * *

In these cases the importers had claimed that the envelopes were duty free, as being packing for lithographed greeting cards, but the courts held that they were subject to duty at the rate for envelopes of 3 cents per pound and 10 per cent, plus an additional percentage in most cases for lining, decoration or other special treatment of the paper. Twenty-one cases involving fancy and decorated papers were abandoned, the claimed duty rate being lower in each case than had been fixed by customs officials. Several importers abandoned their efforts to secure a printing paper duty rate of ¼ cent per pound and 10 per cent on red nature paper, a cover grade, on which duty was levied as cover paper at 30 per cent, by abandoning their protests. Three importations of metal coated or decorated paper classified for duty at rates higher than those which had been claimed by importers. The value of the paper in these cases was nearly $100,000.

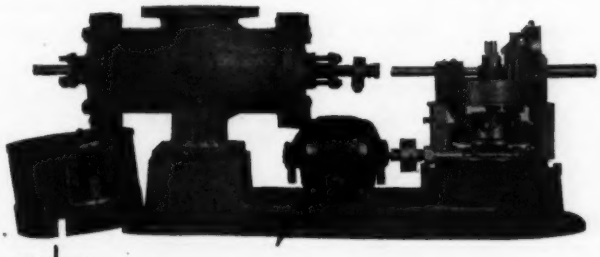
To Handle Fales Slitter

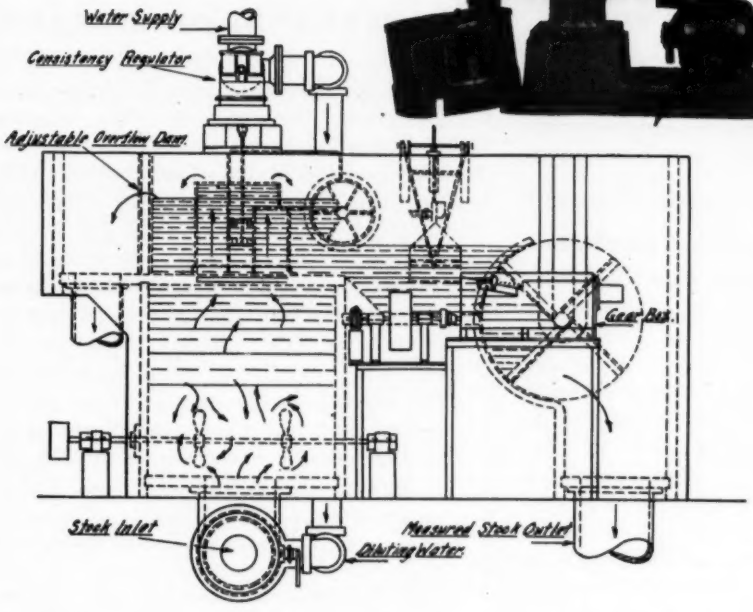
The Gibbs-Brower Company, Inc., 401 Broadway, New York, has recently added to its several lines of pulp and paper mill equipment for which it is sole selling agent, the slitting and rewinding machines manufactured by the L. F. Fales Machine Company, of Walpole, Mass. The new improved Fales Paper Slitting and Rewinding Machine is the result of over 30 years experience in the building of equipment of this character. These machines are built to meet the requirments where a reasonably long run of a width is necessary. The cutters are packed rigidly on the cutter arbors and are not adjustable. They are of the shearing type of construction and may be placed as close together as $\frac{3}{16}$ inch, the limit in this respect being the strength of the slit paper required for the rewind. They are practically self sharpening and the cut tapes are very accurate in width, the variation being held to within plus or minus .001 inch. The tapes are all wound on one arbor, each roll having is own independent drive. The special design of winding roll allows the handling of paper which varies in thickness with a uniform tension, eliminating any lapping or sticking together of tape rolls as they are taken from the arbor.

One very important feature of this machine is that it will slit and rewind rolls down to as narrow as ⅛ inch and all rolls will fall apart after being slit and rewound. It maintains a uniform speed regardless of the diameter of the rolls being cut, the tension regulating the hardness of the roll being varied to suit requirements. The Gibbs-Brower Company will be pleased to furnish any interested parties fullest information in connection with this new type of equipment.

Announcing...

the Precision Consistency Regulator





and the Pulp Tonnage Device

Operating on All the Stock

For most accurate metering of stock and proportioning of more than one stock to the paper machine.

For most accurate regulation of stock consistency at any desired point. Write for full details.

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Modern Equipment for Modern Production

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ESTABLISHED 1872

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MERGER NEGOTIATIONS PROCEEDING

So far Canadian news print companies have remained on the defensive in connection with the price cut made by American producers, and have met the lower rates quoted over the border. They have shown a unanimity in this connection which argues a greater spirit of co-operation than for some years past and the deduction is that the lowering of prices will help along the negotiations under way for a giant merger of Canadian mills. The point is also made that if the Canadian mills cared to concentrate on tonnage rather than on the stabilization of the industry they could take the offensive in the matter of price and underquote American operators by reason of greater return on their production owing to the substantial premium on the American dollar.

In the absence of any authoritative news regarding the negotiations for the merger of the leading Canadian news print producers, various newspapers are printing stories to the effect that the proposed amalgamation is a long way off, and that difficulties in bringing the big group together are believed to be almost insurmountable. From a usually reliable source, however, it is learned that nothing new has arisen to justify this view. As a matter of fact, the negotiations are proceeding normally and, being under much stronger and more determined sponsorship than previous movements to this end, are likely to result in important developments for the reorganization of the industry.

It is understood that definite action has been taken to collect data on the different properties, especially in regard to their relative values. The principal manufacturers are stated to have been asked by questionnaire for detailed information in respect to their properties, news print contracts, or any other material which may assist in arriving at a valuation. The information is to be assembled and digested as a preliminary to drawing up a definite and practical plan of union.

The only discordant note which has so far been struck is by certain newspapers which express the fear that the proposed merger, if put into effect, may antagonize publishers in the United States. In this connection it may be said that those behind the merger proposals have taken into full account this phase of the question, that they have sounded out opinion in certain directions, and that they hope to demonstrate beyond question that a consolidation of interests would be to the advantage of the publishers by giving them far greater assurance in regard to the future than they could possibly secure under conditions that threaten if the producers do not come together.

NEWS PRINT FOR NOVEMBER

Production of news print paper in Canada during November, 1931, amounted to 175,643 tons and shipments to 173,601 tons, according to the News Print Service Bureau. Production in the United States was 94,149 tons and shipments 93,723 tons, making a total United States and Canadian news print production of 269,792 tons and shipments of 267,324 tons. During November, 23,987 tons of news print were made in Newfoundland and 826 tons in Mexico, so that the total North American production for the month amounted to 294,605 tons.

The Canadian mills produced 286,247 tons less in the first eleven months of 1931 than in the first eleven months of 1930, which was a decrease of 12 per cent. The output in the United States was 118,218 tons or 10 per cent less than for the first eleven months of 1930. Production in Newfoundland was 6,858 tons or 3 per cent more in the first eleven months of 1931 than in 1930 and in Mexico 1,054 tons more, making a continental decrease of 396,553 tons or 10 percent.

During November the Canadian mills operated at 56.8 per cent of rated capacity, United States mills at 65.6 per cent, Newfoundland mills at 98.5 per cent and Mexican mills at 46.5 per cent, making a continental average of 61.5 per cent. Stocks of news print paper at Canadian mills totalled 48,735 tons at the end of November and at United States mills 32,398 tons, making a combined total of 81,133 tons which was equivalent to 4.5 days' average production.

PAPER MILL EMPLOYMENT

The Bureau of Labor Statistics received reports from 393 paper and pulp mills which gave their October employment at 77,298, showing an increase of 0.1 per cent over September but a decrease of 8.5 as compared with October of last year. The weekly payrolls in these mills in October amounted to $1,687,191, an increase of 1.9 per cent over September but a decrease of 21.1 per cent under October of last year.

Reports were also received by the Bureau from 305

paper box factories which gave their October employment at 24,430, an increase of 1.9 per cent over September but a decrease of 7.4 per cent as compared with October of last year. The weekly payrolls in these plants in October was $523,990, an increase of 6.5 per cent as compared with September but a decrease of 13 per cent as compared with October of last year.

Regal Paper Co. Sold

"One of the largest business transactions made recently of property in Pulaski occurred Monday afternoon when Richard Sweet, of the Sweet Brothers Paper Manufacturing Company, Phoenix, purchased from Fillmore G. Utley and his son, George S. Utley their interest in the Regal Paper Company, Inc., according to the *Palladium-Times*, of Oswego, N. Y.

"Mr. Sweet made the purchase for himself and for George D. Hull, Rochester; the Raquette River Paper company, Potsdam; Urban C. Hirschey, of the Climax Manufacturing company Castorland, and Earl H. Benson, of Pulaski.

"Following the transaction, which took place in Syracuse, a new board of directors was elected with the following as members: Mr. Sweet, Dimon W. Benson, Edith D. Benson and Earle H. Benson, the latter three of Pulaski. Earle Benson was elected president, Edith Benson vice-president and Dimon Benson secretary and treasurer.

"The Regal Paper Company, Inc., was organized in 1911 when Earle H. Benson became associated with the late Harry A. Moody. The late C. Frank Wood was elected first president. The business was set up in the old Pulaski Electric company building. The first year's volume of business brought in about $10,000. The annual volume for recent years has been more than one million dollars.

"In 1912 the company bought the Peach and Salsbury creamery, Port and South Jefferson streets, and has since been located there. The building has been improved and enlarged as the business expanded, a large addition being erected in 1916.

"Fillmore G. Utley became associated with the company in 1921, buying the interest of Howard P. Dennison, of Syracuse. At that time he became its president and his son, George S. Utley, became vice-president. In 1925 the elder Mr. Utley became superintendent and has since served in that post. He is also a director of the Pulaski National bank.

"The local paper company sells its products in every state in the Union and in some foreign countries. It manufactures nationally advertised brands of toilet tissue, wax paper and paper napkins and the new management plans to add to the stock wrapping paper specialties and Christmas gift wrappings. With the exception of this expansion, no specific change is expected at the plant. The new managers took possession at once and the same staff of workers and same general policies will continue."

Venezuela Taxes News Print

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 16, 1931.—The importation of news print paper into Venezuela is no longer duty free according to a government decree effective immediately. Under this decree the following new tariff classification is established, covering paper employed in the printing of newspapers, books, reviews, and pamphlets: white paper, glazed or satin-finish, and white paper, mat finish, second class plus 80 per cent specific.

TAPPI Notes

G. C. McNaughton has resigned his position at the Mead Corporation, Chillicothe, Ohio and is at present located at 601 Sixth street, Wausau, Wis.

Merle R. Wilkins, formerly research chemist of the Brown Company, Berlin, N. H. is now on the technical staff of the Marinette & Menominee Paper Company at Marinette, Wis.

Thomas Hans, formerly research director for the Container Corporation of America, is now chemical engineer on the staff of the Improved Products Company of Chicago.

Lois V. Hans who was also on the research staff of the Container Corporation is now in charge of the color laboratory of Pettengill, Inc., industrial engineers of Chicago.

A. P. Gregory, formerly with Fraser Paper Ltd., at Madawaska, Maine is now chief chemist of the Maine Seaboard Paper Company at Bucksport, Maine.

The Kalamazoo Valley Section of TAPPI held its December meeting on the 16th. W. A. Crawford, general superintendent of the Sutherland Paper Company gave a talk on "Compensating Felt Costs with Production."

The first annual meeting of the Inter-Society Color Council, of which the Technical Association is a member, will be held at the Museum of Science and Industry, 220 E. 42nd Street, New York, at 9:30 a. m. Tuesday, December 29, 1931. P. F. Wehmer of the Electrical Testing Laboratories, and E. A. Bergholtz of the American Telephone & Telegraph Company, are TAPPI representatives in the Council.

The Store Managers Division of the National Retail Dry Goods Association, 225 West 34th Street, New York, has issued a report entitled, "Simplification of Wrapping and Packing Supplies." Copies at one dollar each are available and can be obtained from the National Retail Dry Goods Association.

W. R. Willets of the Western Electric Company, Kearny, N. J. and H. W. Morgan of the Oxford Paper Company, Rumford, Maine, have been transferred from Junior to active members of the Technical Association.

Bjarne Johnsen, Superintendent of Laboratories of the Hammermill Paper Company, has returned to the United States after having been in Europe for the past year.

To Make Wood Plugs at Newcastle

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., December 14, 1931—The Stormes Novelty Company, manufacturer of wood plugs and cores for paper rolls, in addition to other wood products., is moving from Winchester to Newcastle, Ind. The company will occupy a building in connection with the G. H. Van Matre & Sons woodworking plant, whose sawmills and dry kilns it will use. H. A. Stormes is president of the company and general manager, and T. I. Stormes is secretary. The company holds several contracts with large paper companies for the supplying of cores for rolls. The sawmill of the company at Winchester recently burned and rather than replace the mill, the owners sought a connection with some plant already equipped with mill facilities.

The two Philadelphia sales offices of the Paterson Parchment Paper Company of Modena and Bristol, Pa., have been consolidated in room 878, Drexel Building. Here will be located the headquarters for the Philadelphia sales territory representatives Gilbert Megargee, of the parchment paper division and William McKeever of the wax paper division. The merger of the offices is effected to provide greater sales conveniences for the trade.

DRY ROSIN SIZE

A VISIBLE RECORD OF PERFORMANCE

DRY WOOD ROSIN SIZE

We introduced DRY WOOD ROSIN SIZE after exhaustive mill tests and months of experimenting to definitely *prove* its practicability. Since the date of its introduction, the production of this new Kalbfleisch Size has been maintained at capacity; our plant has operated 24 hours a day, seven days a week, for many months. And facilities are being increased as rapidly as possible.

DRY GUM ROSIN SIZE

Now we are finding a similar enthusiastic reception of Kalbfleisch DRY GUM ROSIN SIZE! This, too, was developed by intensive research, prolonged experimentation, and thorough mill tests. Its efficiency was established beyond a doubt before it was offered. And, as a result, DRY GUM ROSIN SIZE has taken immediate hold . . . its success assured by a visible record of performance.

The KALBFLEISCH CHEMICALS & SERVICE for PAPER

The KALBFLEISCH Corporation

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PENSACOLA, FLA.
KOKOMO, IND.
CINCINNATI, OHIO
CAMP VERDE, ARIZ.
JOLIET, ILL.

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Analysis of Sulphuric Acid*

Tentative Official Standard Method of the Technical Association of the Pulp and Paper Industry

Concentrated sulphuric acid (sp. gr. 1.835, or 66 deg. Baumé) commercially known as oil of vitriol, contains about 93 per cent of H_2SO_4. For many purposes the strength may be determined with sufficient accuracy from the specific gravity. When an accurate determination of the acid content is desired, however, this should be done chemically. The only other determinations usually required for pulp and paper purposes are sediment and iron.

Apparatus

(1) STANDARD HYDROMETER: Graduated from 60 to 70 deg. Baumé in 0.1 degree divisions (or the equivalent specific gravities).

(2) IMHOFF CONE: A cone-shaped settling glass with a mark near the top showing 1 liter capacity and the lower pointed end graduated to 40 cc. in special sub-divisions. This should be supported in a vertical position on a ring stand or other support.

(3) VOLUMETRIC APPARATUS: For the acid determination are required a 1-liter and a 500-cc. volumetric flask; a 100-cc. and a 50-cc. pipette; and a 50-cc. burette graduated to 0.1 cc.

Sediment

The sample shall be thoroughly agitated and 1 liter of it at once transferred to an Imhoff cone. The cone shall be covered with a watch glass and the acid allowed to settle for 24 hours. At the end of that time the volume of sediment shall be read and calculated to volume percentage.

Gravity

The specific gravity or gravity Baumé shall be determined by means of the standard hydrometer at 60 deg. F. The relationship between the two and the corresponding acid strength are shown in Table I.

TABLE 1
STRENGTH AND WEIGHT OF SULPHURIC ACID

Gravity Bé.	Specific gravity at 60/60 deg. F.	H_2SO_4 per cent	Weight per gallon pounds
60	1.7059	77.67	14.22
61	1.7262	79.43	14.39
62	1.7470	81.30	14.56
63	1.7683	83.34	14.74
64	1.7901	85.66	14.92
64.25	1.7957	86.33	14.96
64.5	1.8012	87.04	15.01
64.75	1.8068	87.81	15.06
65	1.8125	88.65	15.10
65.25	1.8182	89.55	15.15
65.5	1.8239	90.60	15.20
65.75	1.8297	91.80	15.25
66	1.8354	93.19	15.30

* This method has been approved by the Non-Fibrous Materials Testing Committee of the Technical Association of the Pulp and Paper Industry. Send criticisms and suggestions to R. C. Griffin, chairman, 30 Charles River Road, Cambridge, Mass.

Sulphuric Acid

Into a clean glass-stoppered weighing bottle, previously weighed with its stopper, pipette rapidly 10 cc. of the acid. Immediately stopper the bottle and weigh it with its contents. Carefully transfer the acid from the bottle to a beaker containing 200 cc. of cold water, rinsing out the bottle thoroughly with water into the beaker. Transfer the acid solution to a liter volumetric flask, cool to room temperature, dilute to the mark with water and mix well. At once pipette out 100 cc. of this solution into a 500 cc. volumetric flask, dilute to the mark with water and mix well. Then pipette out 50 cc. of this solution (equivalent to 1/100 of the weight of the original sample) into a beaker and titrate with 0.1 N NaOH solution, using methyl orange indicator. Calculate the titration to percentage of H_2SO_4.

Calculation:

1 cc. 0.1 N NaOH = 0.004904 gram H_2SO_4

Iron

The iron shall be determined colorimetrically by the procedure given in the method for Alum.

New TAPPI Members

George E. Corson has been chemist of the Clinton Corn Syrup Refining Company, Clinton, Iowa, for seven years, and is a graduate of Iowa State College. He was formerly associate in charge of soil survey in the Chemical Section of Iowa State College.

Sven A. Fahlgren is chemist of the North Tonawanda, N. Y. mill of the International Paper Company. In 1924 he graduated as a chemical engineer from Orebro Technical College in Sweden, following which he worked in sulphite mills in Sweden. His first position in America was in the pulp testing laboratory of Emil F. Johnson in New York City, following which he was chief chemist of Brown & Bridge Mills at Troy, Ohio, and of the Tonawanda Paper Company, North Tonawanda, N. Y.

Leonard L. Griffiths, Jr., is sales representative for Victor G. Bloede Company of Richmond, Va., manufacturers of gums and starches. In 1922 he graduated from Michigan College of Mining and Technology, following which he was employed by the Michigan State Cement Industry, the Steel Sales Corporation, Hewitt-Gutta Percha Rubber Company, the Electro Bleaching Gas Company and the Portland Cement Association, respectively.

Ragnar Monnberg, chief chemist of the Abitibi Fibre Company, Smooth Rock Falls, Ont., has been transferred from Associate to Active membership.

Analysis of Sulphur-Burner Gas (Sulphur Dioxide Gas)*

Tentative Official Standard Method of the Technical Association of the Pulp and Paper Industry

The strength of sulphur burner gas is determined in most pulp mills by means of the Orsat apparatus. This is believed to give sufficiently accurate results for control tests and is recommended on account of its simplicity and convenience. It is also often desirable to determine the amount of sulphur trioxide in the gas.

Apparatus

The instrument used for determining the SO_3 content shall be the Orsat type or a similar apparatus consisting essentially of one or more absorption pipettes, connected by a stopcock and capillary tubing to a capillary T-tube. One end of the T-tube shall be connected by means of a two-way stopcock to a 6-inch calcium chloride tube which is filled with shredded asbestos or glass wool and which in turn is connected to the gas line. The other end connects to the upper end of a gas burette, graduated from zero to 100 cc. in 0.1 or 0.2 cc. divisions and enclosed in a water jacket. The lower end of the burette shall be connected by a rubber tube to a levelling bottle with mercury. The mercury in the gas burette shall have its surface covered with approximately 0.2 cc. of water and shall be kept in clean condition. (For less accurate routine work water previously saturated with SO_2 gas may be used in place of the mercury). The absorption pipettes shall contain a 50 per cent solution by weight of chromic acid in water.

The apparatus used for determining the SO_3 shall consist of a hard-glass gas-sampling tube surrounded by a water jacket and connected to a glass tube about ¾ inch in diameter and about 12 inches long filled with garents or bits of porcelain. This last tube shall be cooled with ice and connected at the other end with a 5-liter bottle filled with water previously saturated with SO_3 gas and containing a thermometer and a siphon tube with stopcock for withdrawing the water into a large graduated cylinder.

Sulphur Dioxide

The liquid in the absorption pipette shall be drawn up to the graduation mark and the stopcock closed. The gas burette shall be filled with mercury to the 100 cc. mark by raising the levelling bottle, with the stopcock to the gas line open to the air. The stopcock to the gas line shall be turned to connect with the gas line while the mercury column is still ascending and then the levelling bulb shall be lowered and gas drawn in to fill the burette. It shall then be allowed to escape to the air by raising the levelling bulb and turning the gas-line stopcock to exhaust. The burette shall be alternately filled and emptied several times to insure a good sample of the gas and then shall be exactly filled with gas by adjusting the mercury level in the levelling bottle and the surface of the water above the mercury in the burette to the zero mark at atmospheric pressure. This is accomplished by first bringing the mercury level in the burette below the zero mark, opening the gas-line stopcock to the air, adjusting the level to zero and closing the gas-line stopcock.

After the burette has been filled with exactly 100 cc. of gas at atmospheric pressure the levelling bulb shall be raised slightly, the stopcock leading to the absorption pipette shall be opened and the levelling bulb alternately raised and lowered, forcing the gas several times from the burette into the absorbing liquid. Finally the absorbing liquid shall be brought to the graduation mark by lowering the mercury bulb slowly and the absorption pipette stopcock closed. The volume of the residual gas shall be measured by adjusting the mercury and the levelling bulb to the same level as that of the water above the mercury column in the burette and taking the reading. The contraction in volume of the gas from its original volume, expressed in cc., shall be reported as the percentage of SO_3 by volume.

Notes: (1) Care should be taken to prevent contact of the chromic acid absorbing solution with the mercury in the gas burette inasmuch as oxygen is formed which destroys the accuracy of the results. The gas burette must be thoroughly cleaned if this should happen.

(2) The water in the jacket surrounding the burette shall be maintained at constant temperature during any given determination.

Sulphur Trioxide

The apparatus shall be connected to the gas line and by siphoning water slowly from the siphon bottle into the graduated cylinder 5 liters of the gas shall be drawn through the apparatus into the siphon bottle at the rate of about 1 liter in 20 minutes. The temperature of the water in the bath surrounding the gas sampling tube shall be held constant within plus or minus 2 deg. C. during this period. The apparatus shall then be disconnected from the gas line and washed out thoroughly with water containing a known amount of 0.1 N iodine solution. The amount of 0.1 N iodine used shall be in excess over that required for reaction with the SO_3 contained in the apparatus. The washings shall be collected in a beaker and the excess iodine back-titrated with 0.1 N thiosulphate solution. The solution shall then be titrated with 0.1 N NaOH solution using methyl red as indicator.

Calculations

Results shall be reported either as percentages by volume or as grains per cubic foot, as desired. The volume of gas aspirated must first be calculated to the dry basis by multiplying by $\frac{B - P}{760}$

where

B = Barometer reading in mm.
P = Vapor tension of water at the observed temperature of the gas in the siphon bottle.

The value of P may be obtained from Table 1. If B is not known no serious error will be introduced in assuming it to be 760, unless the barometric conditions are very abnormal.

TABLE 1
VAPOR TENSION OF WATER IN MM. OF MERCURY

Temperature deg. C.	Vapor Tension	Temperature deg. C.	Vapor Tension
10	9.1	22	19.6
11	9.8	23	20.9
12	10.4	24	22.2
13	11.1	25	23.5
14	11.9	26	25.0
15	12.7	27	26.5
16	13.5	28	28.1
17	14.4	29	29.7
18	15.3	30	31.5
19	16.3	31	33.4
20	17.4	32	35.3
21	18.5	33	37.4

The weight of SO_3 per liter of the dry gas tested is then calculated from the titration in cc. of 0.1 N solutions as follows:

$$\frac{\text{NaOH} - (\text{Iodine} - \text{Thio})}{\text{Liters of dry gas}} \times 0.0040 = \text{grams of } SO_3 \text{ per liter.}$$

And finally

Grams of SO_3 per liter × 29.6 = per cent by volume.
Grams of SO_3 per liter × 437 = grains per cubic foot.

* This method has been approved by the Non-Fibrous Materials Testing Committee of the Technical Association of the Pulp and Paper Industry. Send criticisms and suggestions to R. C. Griffin, chairman, 30 Charles River Road, Cambridge, Mass.

Sulphite Pulping Process Developments*

By A. H. Lundberg[1]

Today we cook sulphite pulp purely on the basis of a fund of practical experience, a good hunch, and faith in the human element. At the best we are making just a very good guess. We know that things will go on inside the digester over which we have little control.

There are many variable factors which bear upon uniformity. The wood may be wet or dry, of different species, cut at different seasons, of different ages or obtained from different localities. When the gate to the chip bin is open there is no guarantee that the digester will be uniformly filled. Some zones may be packed harder than others and thus restrict circulation. We can control the quantity of acid pumped to the digester, but to make absolutely uniform acid with the right proportions of free and combined is difficult. The raw acid is made easily enough, but cooking liquors are made up from relief gases and liquors. Other variables include plugging by steam and relief piping of relief strainers. Steam may vary or the cook may have an off day.

When we see the varying cooking routines used at the different mills and note sulphur consumption varying between 200 and 350 pounds per ton of pulp or when we note the non-uniform results obtained even among mills of the same general locality, the question is raised, "What have we done about establishing uniformity, other than build up our inventory of alibis?" Very little that is constructive has been done until quite recently. Circulation in the digester—or lack of it—is probably the one single factor more apt to cause poor uniformity than any other in the manufacture of sulphite pulp.

In the sulphate process the problem has been solved adequately for years by the use of forced circulation through an outside heater. Let us be fair to the sulphite industry and point out that application of the same principle of cooking to sulphite has been waiting upon the initiative of the steel industry in developing suitable chrome nickel alloys that would stand up under the excessive corrosion encountered in the circulation of hot cooking liquor. Now we have these suitable alloys, and in consequence a practical heater-circulator has been developed.

Before describing the recently developed circulating system, let us sketch briefly the normal operation in the old type digester. Without the circulator we actually depend on certain temperature differentials of the acid in the digester for circulation. Steam entering the bottom of the digester makes contact with the acid, which, when heated, travels upward, replacing cooler acid which finds its way to the bottom. The warm acid in its upward movement may find some tightly packed zones to obstruct its travel. These dense zones the acid will by-pass and in so doing, set up regular channels in the chip mass. When this happens, we say the digester is being bored. Without forced circulation this undesirable characteristic is uncontrollable.

The Jenssen-Brobeck System

Different construction of heaters and auxiliary equipment has

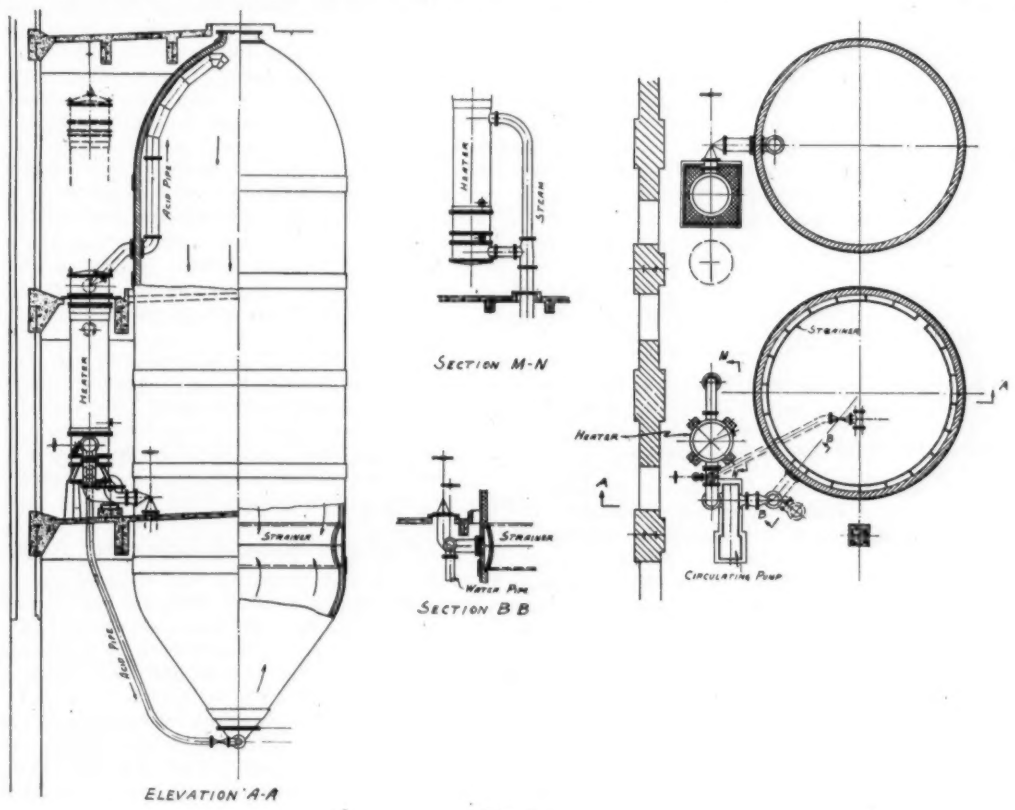

FIG. 1

General Layout of Brobeck Circulation and Indirect Heating System for Sulphite Digester.

* Presented at the fall meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry, Powell River, B. C., Oct. 23, 1931.

[1] Member TAPPI, Chemical Engineer G. D. Jenssen Company, Seattle, Wash.

been tried but the only really satisfactory heater design was developed by Arnold Brobeck, general manager of the Korsnas Wood Company, Sweden, whose system is sold in America under the name of the Jenssen-Brobeck Sulphite System.

As an average sulphite digester is quite large, holding about 30,000 to 35,000 gallons of acid, it is necessary to maintain a circulation through the heater of about 3000 gallons per minute. Doing so, the total acid quantity in a digester is turned over every 10 to 15 minutes and the temperature differential is brought down to the lowest possible point.

To be able to maintain sufficient circulation throughout the most of a cook, a special non-clogging strainer of very large area had to be designed. It should be quite clear to everybody that in maintaining such a rapid circulation, all question of poor circulation is eliminated. It was found however, that in order to make an absolutely uniform pulp in every section of a digester, the content of the bottom cone should be kept 1 to 2 deg. C. lower than the temperature of the rest of the digester content. It is easy to understand the reason when one considers that the concentration of sulphur dioxide in this part of the digester necessarily is somewhat higher, because of the higher hydrostatic pressure prevailing. To take care of this feature, a part of the acid is returned to the bottom of the digester without passing through the heater.

Swensson Digester Filling Device

As mentioned before, the filling of the chips into the digester is of great importance to insure a uniformly packed digester. Several arrangements have been tried and the outstanding method of today is probably the one invented by M. Swensson, general manager of the Hissmofors Sulphite Mills in Sweden.

The Swensson method uses saturated steam as the packing medium. The apparatus consists of two concentric steel pipes connected together with a cross pipe, each pipe having a separate valve. These two valves are connected by means of intermediate gears in such a manner that when one valve closes, the other one opens slowly. The steam from the outer pipe imparts a straight downward motion of the chips, while the steam from the other one spreads the chips sideways.

By opening the valves either by hand or automatically, the filling is taken care of in such a way that the chips are caused to lie flat and form an almost horizontal surface. It is also to be recommended that the chips enter the apparatus fairly evenly, which can be arranged through feeding them continuously from a well loaded belt.

Besides getting the benefit of an even packing, it is in this way possible to effect a considerable increase in digester yield, the average increase by using the Swensson chip filler being 16 to 20 per cent.

There is no heat loss in using the chip filler, as the steam is absorbed by, and to some extent loosens up, the chip mass.

Operation of Jenssen-Brobeck System

The cooking operation in a modern sulphite mill adopting the Jenssen-Brobeck system is greatly simplified. Practically the only thing the cook has to do is to test his acid and keep an eye on the pump.

The standard procedure is as follows: After filling with chips, the digester is thereafter completely filled with acid, the circulating pump started, and steam turned on the heater. It is to be remembered that the steam should be saturated and of about 150 deg. C., corresponding to a steam pressure of about 50 pounds.

If there is more than one digester in the mill, all of them are connected to a common relief header. This header in turn is connected to a relief cooler and further on with the reclaiming tank. This is in case the mill is not equipped with Chemipulp accumulators. The Chemipulp process should be adopted by every sulphite pulp mill without delay as they are practically paying for the use of same whether they have it or not. I talked to you about this system at the last Technical Association meeting at Everett, and will therefore not go into details, and its merits at this time.

I will now describe in more detail how the Brobeck system works. The line from the relief header is equipped with a back pressure valve which will maintain a desired constant pressure in the digester. Consequently after the cook has started the pump and turned on the steam, he turns his top relief valve wide open. The relief from the other digester will now rush in and raise the pressure in this freshly started digester to the desired point. At this point the back pressure valve again starts to work. The cook has nothing more to worry about. His relief is fully, and automatically, taken care of until the blow is ready and the pressure is to be lowered.

The relief valve is then closed, and another valve by which the digester is directly connected to the relief cooler, and the reclaiming tank is opened. As no steam is coming in direct contact with the pulp, there is no condensation and dilution of the acid taking place and consequently the relief will consist only of gases.

No strainer is required for the top relief line. The cooking operation is very simple and the desired temperature curves can be followed, either by regulation of the steam to the heater, or by throttling the acid pump valve in front of the heater.

As it is possible to follow any predetermined temperature curve very closely it should be possible to produce pulp of the quality desired at any time and also to produce absolutely uniform pulp from cook to cook.

Some one might ask if the wood condition might be hard to control. This is answered by saying that wood quality does not vary so much daily as it is liable to do from season to season.

The sulphite mill needs the advantage of every development to stay in competition. The Jenssen-Brobeck circulating system, the Chemipulp process and the Swensson chip fillers are three reliable aids to the sulphite manufactruer. They are guide posts on the corners of the highway leading to uniformity. Together they provide the sulphite superintendent with the means for getting any desired pulp quality on short notice.

What definite advantages does the Jenssen-Brobeck System offer, in addition to uniformity? It gives a maximum yield. It reduces steam consumption and permits a higher efficiency in the power plant because no high pressure steam is required for cooking. The turbine can be bled at 50 pounds instead of the usual 100 to 125 pounds, and the saving must be credited to the system. The pulp has a higher market value because it is possible fully to control the cooking operation. The fiber length of the pulp is materially increased. The maximum Mullen, tear, fold and tensile strength as embodied in the native wood cellulose is fully brought out.

It is interesting to note in conclusion that it was the old established Mitscherlich mills in Sweden, well known for their high grade pulps all over the world, who were the first to see the benefits of the Brobeck system and adopt it. Many installations have been made since the Brobeck System was first put on the market a few months ago and today it is used on practically every grade of sulphite pulp manufactured.

TAPPI Education Committee Activities

The plan of activities for the education committee of the Technical Association of the Pulp and Paper Industry for the ensuing year consists of the following projects:

1. Completion of the survey now being made through the cooperative efforts of the Federal Board for Vocational Education and the Technical Association.

2. Completion of the survey concerning the status of the technical man in the industry by a subcommittee of which C. E. Libby of New York State College of Forestry is chairman.

3. Compiling of data to be included in a detailed informatory report to be presented at the annual meeting of the Technical Association, February 15-18, 1931.

Rapid Laboratory Sheet Making and Testing*

By P. H. Prior[1]

During the course of investigating and testing wood pulp and paper stock, we found that the standard method for sheet making and testing, as laid down in the interim report of the pulp evaluation committee of the Technical Section of the Paper Makers' Association of Great Britain and Ireland, does not admit of the rapidity necessary for general mill work, particularly for work of a continuous routine nature. In an investigation in the mill when it is usually necessary to make a series of tests, for instance in checking variations in half stuff or stock flowing to the paper machine, about 24 hours elapse before the results are available and by this time they are somewhat 'ancient history' and their value thereby very much reduced.

These difficulties not only represent our own experience but have been stressed by our friends abroad. Workers in American and Scandinavian laboratories have agreed that the P.M.A. method produces excellent sheets giving accurate results which compare favorably with the best of their own methods but they point out that the time taken in carrying out a test renders the method comparatively useless from their point of view. For instance in a pulp mill where routine testing is carried on continuously, the results would be known far too late to check any serious variation that might have occurred. At the same time when making such a large number of tests the special drying rings used in the P.M.A. standard method fill so great a space that this part of the method cannot be considered at all seriously.

Of the operations involved in making a test sheet, excluding the soaking of dry pulp which does not apply to routine stock testing, the ones taking most time are drying and conditioning for which at least twelve hours are specified and this usually means leaving sheets overnight. Practically every other method of testing which is in general use employs heat to speed up this process and our own experiments were the direct outcome of seeing Swedish, Norwegian, American and Canadian methods in operation and discussing them in detail with their authors. In some directions we have adopted their procedure but at the same time we have been led to introduce a few modifications of our own.

The modified rapid method is carried out by drying the pressed sheets between two smooth surfaced cloths on a drying cylinder at about 60 deg. C. for fifteen minutes. The dried sheet is conditioned at standard humidity and temperature in a strong draught for fifteen minutes and is then ready for immediate testing. The time of testing from drawing the sample to obtaining the result is thereby reduced to about two hours without affecting the accuracy of the test. Several workers abroad explained that they had proved that below 60 deg. C. the sheet was not affected by heat in drying. As a start we assumed this was true and sought to find how quickly drying, and subsequent conditioning, could be effected under different conditions and how the maximum speed could be obtained without affecting the values of the results. The three main factors in drying of this nature are temperature, the area of surface exposed and the nature of the air currents. A temperature close to, but not above 60 deg. C. was adopted as being sufficiently rapid but, as subsequent tests confirmed, not detrimental. It was assumed that the sheet was in a fit condition for strength testing when it reached a constant weight, or in other words when the moisture content is in equilibrium with the surrounding atmosphere, 65 per cent relative humidity and 65 deg F. for preference (normal air). This has been queried by one worker abroad who finds that, with mechanical pulp sheets, constant strength equilibrium is only reached some time after the moisture content equilibrium. We have tested this with beaten kraft and find that the strength does not change during the first hour after attaining weight equilibrium and the results agree sufficiently well to indicate that this is not a serious source of error.

We have found that between 50 and 60 deg. C. the paper loses moisture until it retains 2-3 per cent (calculated on the bone-dry weight of the paper). When this paper containing a low moisture content, but not completely bone dry, is exposed to normal air, it picks up moisture until it reaches a constant moisture content. The time taken to reach this equilibrium depends to a remarkable degree on the draught and in a current of 12 feet per second (average speed of an office fan) the sheet containing 2-3 per cent of moisture, returns to constant moisture equilibrium in under 10 minutes. The following results of a typical series of experiments illustrate this.

In these experiments sheets were made from between kraft pulp by the P.M.A. standard method with double pressing but without using glazing plates (except for sheet A). All weighings were made by folding the sheet loosely and putting it quickly into a tared air-tight glass weighing bottle. This operation only takes a few seconds and the sheet does not change its moisture content appreciably while in the bottle, thus the time it is in the bottle is not counted into the drying times. That this procedure is correct is shown by the way in which the point lies close to the curves even when the changes are very rapid.

Heat drying was carried out with the sheet covered by a cloth under tension and resting on a cloth-covered heated cylinder. The apparatus is illustrated in figure 4 and described in detail below. Where conditioning by the aid of a draught is indicated, the sheets were suspended directly in front of a 10-inch electrical office fan running at its full speed. A simple rack was devised which allows 10 sheets to be held in front of the fan so that

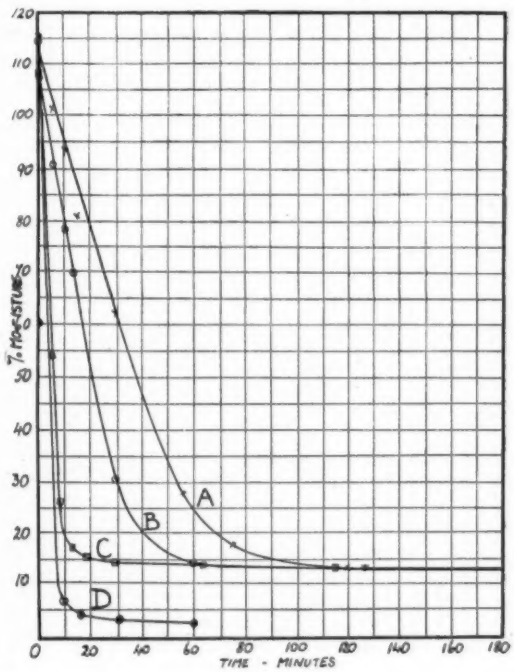

FIG. 1

* Based on the British pulp evaluation method.
[1] Member TAPPI; research chemist, Albert E. Reed Co., Aylesford Paper Mills, Larkfield, Kent, England.

they do not interfere with each other. The conditioning was carried out in a humidity room where the air was kept at 65 per cent r.h. throughout and 65 to 70 deg. C. The percentage moisture was calculated from the weight of the sheet found by bone drying in an oven at 105 deg. C. for fifteen minutes or more, at the end of each experiment.

Drying Experiments

Fig. 1 contains a series of curves illustrating the rate of drying under different conditions. Curve A is that of a sheet made entirely by the standard method, using a glazing plate and drying rings. Quite a fair natural draught was passing over the sheet and since one sheet was dried alone and not affected by the moisture evaporated by a stack of sheets, conditions were especially favorable. About two hours appears to be the minimum time for this method of drying.

Curve B is that of a sheet dried on a wire gauze rack in the same draught as A but without a glazing plate, thus allowing free evaporation from both surfaces. The rate of drying is increased but the sheet cockles up so much that fair testing is not possible.

Sheet C was similar to B except that a much stronger air current from the fan was used. The rate of drying is very much more rapid, the time being only a sixth of that required for sheet A but again the sheet is cockled.

Sheet D was dried on the cylinder at 52 deg. C. No draught was used. The rate of drying is faster than in any of the other methods and a lower moisture content is reached than the equilibrium content attained in normal air. With prolonged drying at this temperature the sheet still remained about 3 per cent heavier than when it was bone dried at 105 deg. C.

Fig. 2 shows the drying curves of sheets heated to 32 and 52 deg. C., respectively, which are too close together to be shown clearly in the first diagram. From these it will be seen that, as would be expected, drying is quicker at the higher temperature although at the end of 15 minutes the moisture content is below normal air equilibrium in each case. A temperature above 50 deg. C. leaves the greatest margin to insure a moisture content suitable for reconditioning. Some previous experiments on kraft paper, of which lack of space prevents description, have shown that prolonged drying at 80 deg. C. does not permanently affect strength values although quite a short drying at 100 to 105 deg. C. is detrimental.

Fig. 3 shows the rates at which moisture is regained on exposing

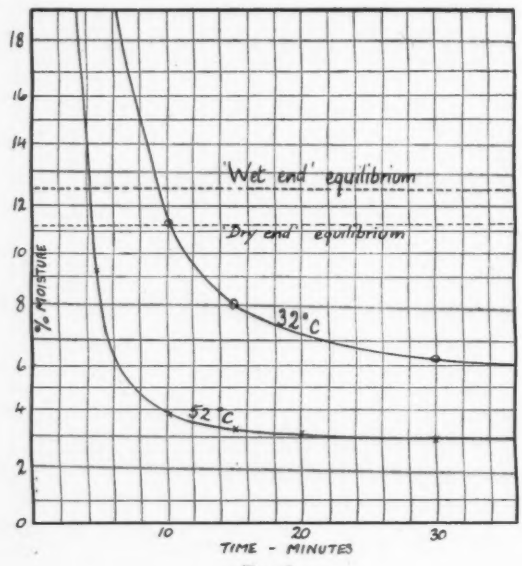

FIG. 2

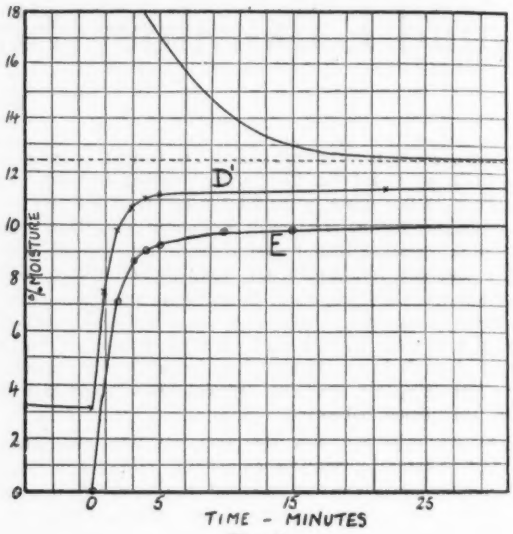

FIG. 3

the dried sheets in front of the fan in normal air. Curve D' is the regain of the sheet dried by heat according to curve D in Fig. 1. Curve E is the regain of a sheet that has been bone dried in the oven at 105 deg. C. We have not obtained curves for heating conditions between 60 deg. C. and 100 deg. C. as it has not proved necessary to go over 60 deg. C. for speedy drying. A condition of constant weight equilibrium is reached remarkably quickly in all cases, less than 15 minutes sufficing in every test that we have made.

Some interesting points are revealed by the different final moisture contents reached by the sheets treated in different ways. In each case the sheets air dried reached a figure close to 12.5 per cent. We can describe this as 'wet end' equilibrium. Sheets dried on the cylinder at temperatures below 60 deg. C. return to a content of 11.0 to 11.5 per cent which we can call 'dry end' equilibrium. The same figure is reached even when the sheets have been kept on the cylinder for over two hours. Finally sheets that have been bone dried return to a lower content of 9.7 per cent. These final moisture contents remain practically constant over a period of several hours although some tests lead us to believe that the 'wet end' and 'dry end' equilibrium figures tend to approach each other during a period of several months. It is not certain whether the lower amount of moisture regained by the bone dried sheet, and by the heat dried sheet, is due to the loss of volatile matter, a change in the affinity of cellulose and water or to the extremely slow rate of change in moisture content when approaching equilibrium. In any case we find that no loss of strength or irregularity of results is introduced by heat drying and conditioning as illustrated by Curve D.

These curves, which are typical representatives of a series of similar experiments, lead us to the important conclusion that paper can be dried in 15 minutes to a moisture content well below equilibrium, but not below 2 per cent, the temperature being not more than 60 deg. C. If subjected to a rapid air current the paper can be brought to dry end equilibrium in a further 15 minutes.

Drying Apparatus

Except for one important modification the drying apparatus is almost exactly the same as that commonly used in many Swedish laboratories and described by Gosta Hall (Technical Section Proceedings, Vol. X, Part 1. p. 118.). For the sake of clearness we illustrate the apparatus by Figs. 4 and 5 and a photograph. The drying cylinder A is made of thin sheet metal, in our case galvanized iron 3/64 inch thick, the dimensions being 20 inches diameter and 21 inches long. The edges meeting on the drum are butt jointed to give an even surface. The ends are of wood

and at their centers carry tubular spindles formed from 3½ inch piping. These spindles are carried on brackets B. Through one spindle passes a smaller diameter pipe which carries four electric lamp holders of the standard bayonet pattern while the wires are carried through this pipe which is fixed to the bracket outside the cylinder and hence does not revolve. The lamp holders are spaced out as equally as possible. In our case four 100 watt lamps are sufficient to maintain the temperature between 50 and 60 deg. C. The other spindle is plugged. A small door C is provided to give access to the lamps. In the Swedish machine a small fan is employed sometimes to distribute the warm air inside the cylinder but so far we have not found this necessary.

We have modified the original apparatus by fixing on the surface of the cylinder a covering of thin woolen felt, printer 'blanket' being very suitable. By this means drying is speeded up since the sheets are directly in contact with the felt-covered cylinder and also it allows them to dry more from both sides. In addition a smooth but not glazed finish is obtained on each surface, making the sheets more comparable with paper from a Fourdrinier paper machine. It avoids any of the complications introduced by glazing plates whether made from stainless steel or of flexible ferrotype plate.

An endless band of material D.D. passes over the cylinder then round a wooden felt roll E, 8 to 9 inches in diameter, and under the tension roll G. which is made of iron and weighs about 30 pounds. The tension roll which is free to revolve and rests on the felt is kept in position by the arms H which also allow the roll to be lifted if necessary. A handle I is attached to the small felt roll and by turning this the felt rotates the drying cylinder, allowing sheets to be introduced and removed as required. It was some time before a suitable material was found for this band. It has to be reasonably porous, smooth surfaced, fluffless and above all must stretch as little as possible in use. The printers woolen blanket is eminently suitable to fill the first three requirements but unfortunately it stretches very considerably under the tension roll and, although stretching most at first, it continues to do so over a long period. A result of this elasticity is that the sheets shrink on drying by a varying amount as the material stretches out. So far we have found the material known as 'crash' to be the most satisfactory. This is a loosely woven cotton material, not quite as stiff as

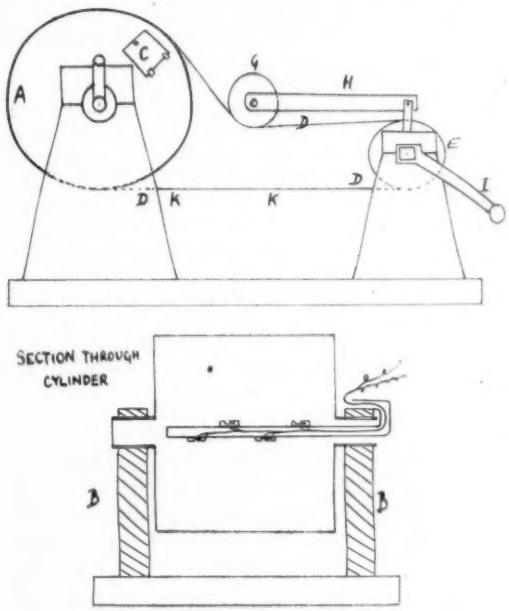

FIG. 4

Laboratory Sheet Drying Apparatus.

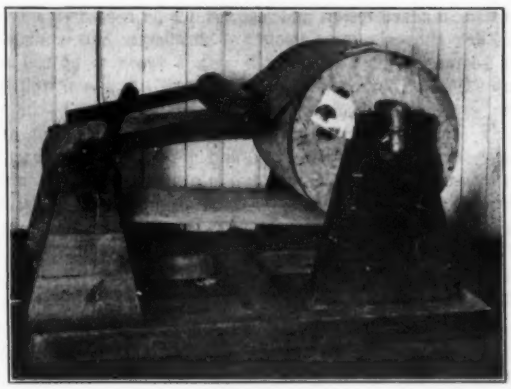

FIG. 5

Sheet Drying Apparatus

canvas, which stretches very little in use. Using this material, sheets shrink a small known amount which depends on the degree of beating.

In order to operate the apparatus the heating lamps are lit some time before use, the tension roll being in position. The test sheets to be dried are placed on the upper surface of the lower part of the band, position K, and the handle of the felt roll turned until the sheets are sandwiched between the cylinder and the band. The cylinder illustrated is wide enough for two standard sheets side by side and as many as ten sheets may be held on the cylinder surface covered by the band.

Shrinkage

Some comments on shrinkage are necessary. The original work of the P.M.A. committee was mainly on groundwood and other slightly hydrated fibres. These sheets have very little tendency to shrink under any conditions. Hydrated stock, such as well beaten kraft, shrinks very considerably, up to 8 per cent on the paper machine under Fourdrinier conditions. The maximum shrinkage with a given sheet is obtained when the sheet is allowed to dry without any tension as in Curves B and C. Under these conditions the sheets cockle too much to be tested. On a paper machine shrinkage is partially restricted by the tension between the cylinders and due to the felt. On an M.G. cylinder or on the P.M.A. glazing plates or the Swedish ferrotype plates shrinkage is prevented almost entirely. It depends on the nature of the work being done as to which of these conditions, free shrinkage, controlled shrinkage, or no shrinkage at all, will give the greatest amount of useful information. Contraction is the natural behavior of a beaten sheet and it may be argued that to restrict this contraction means applying a greater proportionate strain to the more heavily beaten sheets. On the other hand by preventing all shrinkage, conditions are clearly known and more easily duplicated. Free shrinkage is not practicable but the drying method described in this article leads to a certain amount of shrinkage which is under control. We have carried out a number of experiments which show that different classes of stock shrink by different amounts but that results in each class remain constant without close limits.

To determine the shrinkage, two marks 100 mm. apart are made in the sheet after the second pressing of the standard P.M.A. method. A very satisfactory means of making these marks rapidly and accurately is to employ a strip of metal having two pin points exactly 100 mm. apart. The points are pressed into the sheet as it lies on the blotter and the marks touched with a sharp copying ink pencil in case the pin holes should become obliterated during drying. The distance between the marks is measured on the flat dried sheet and the percentage of shrinkage readily calculated.

As a result of a large number of tests we find that unbeaten sheets of mechanical or chemical pulp shrink 0.5 to 1.5 per cent. Sulphite pulps beaten to a freeness of 560, as measured on a

Canadian standard tester, and also kraft pulp beaten to a freeness of 630 deg. show the same amount of shrinkage. Sheets made from kraft beaten in the Lampen mill with a freeness of 630 to 280 shrink 2.0 to 2.5 per cent. Kraft stock which has been well beaten in the paper mill shrinks more as shown in Table 1—the figure ranging from 4 per cent at 280 freeness to 6 per cent at 140. Since these figures are not large and are constant for each type of stock, and in addition approach nearer to the paper machine conditions, the shrinkage was not considered to affect the accuracy of the proposed method.

As a result of the various tests described, a method for rapid sheet making has been evolved which is carried out in the following manner.

Rapid Sheet Making Method

Test sheets are formed and couched off the wire according to the standard method but in place of the mirror-polished steel plates a fresh blotter is placed on the test sheet and then a further blotter (the "press filler" of the standard method).

This gives a pile for pressing made up of two blotters, sheet, three blotters, sheet and so on, finishing up with two blotters on top. Pressing is carried out by the standard method, the pressure rising in half a minute to 50 pounds per square inch and being maintained for 5 minutes.

The sheets are then removed from the press and all the blotters replaced by dry ones, and the test sheets are so arranged that those which were nearest the top of the press in the first pressing are now nearest the bottom and vice versa. The stack is put in the press again and pressed for 2 minutes at 50 pounds per square inch, the pressure being raised rapidly to 50 pounds.

After the second pressing, the sheets are removed from the press and blotters, and laid in rows close together on the flat horizontal part K of the felt of the drying apparatus. The felt tension roll being in position, the felt roll handle is turned and the sheets are carried round until they are held between the cloth band and the felt covered cylinder. Care is taken that all the sheets are in the arc common to the felt and cylinder. If this precaution is not taken the portions not gripped by both felts will buckle and shrink irregularly.

The sheets are allowed to dry in this position for at least 15 minutes and at the end of this time the felt roll handle is turned so that the sheets are released. For continuous testing a fresh batch of sheets may be laid on the flat horizontal part of the felt just before releasing the dried test sheets, so that the fresh sheets are wound into position at the same time as the others are released. The dried sheets are taken to the constant humidity room and clipped in a rack placed some 6 inches in front of an ordinary electric fan running at full speed, which gives an air current of about 12 feet per second. After 15 minutes the sheets are ready for testing.

Physical Tests

This method enables test sheets to be made up and conditioned ready for testing in 90 minutes from receiving the samples of stock, the time being divided up as follows:

For carrying out the	
Consistency test on stock	15 minutes
Diluting, measuring out and making 6 sheets	30 minutes
Pressing (twice)	15 minutes
Drying on cylinder	15 minutes
Conditioning	15 minutes
Total	90 minutes

Testing for burst and tear and calculating the respective factors

TABLE 1

Stock	Freeness	Shrinkage
Mechanical pulp A	108	0.5-1.5%
Mechanical pulp B	40	0.5-..5
Sulphite, unbeaten	630	1.0
Sulphite, Lampen beaten	560	1.0
Kraft, unbeaten	670	1.0-2.0
Kraft, Lampen beaten	650	1.0-2.0
Kraft, Lampen beaten	500	1.0-2.0
Kraft, mill beaten	280	4.0
Kraft, mill beaten	200	5.0
Kraft, mill beaten	145	6.0

TABLE 2

Set No.	Substance D.C.* 480 Air-dry	Burst Factor	Tear Factor
1	34.8	1.87	1.60
2	33.8	1.84	1.57
3	33.6	1.91	1.62
4	33.1	1.87	1.58
5	33.4	1.92	1.55
6	33.5	1.94	1.55
7	33.1	1.90	1.56
8	33.1	1.89	1.55
9	32.4	1.93	1.51
10	32.5	1.85	1.54
Average	33.3	1.89	1.56
Maximum per cent deviation	4.4	2.7	3.6
Average per cent deviation	1.5	1.5	1.5

* Substance D.C. refers to the British term double crown. The table shows the basis weight of 480 sheets 30 inches by 20 inches in size.

can be carried out in half an hour if results are calculated on the air-dry substance. This brings the complete time for testing down to two hours which is invaluable when carrying out tests on the behavior of beaters or on stock supplied to a paper machine.

In order to determine the accuracy of the method on repetition, a number of tests were carried out by making up several sets of five sheets each from the same stock, testing each set of five separately, and comparing the results. It was found from these results that the average error for the burst and tear factors was within plus and minus 2 per cent, while occasional deviations from the mean might be as much as 6 per cent. These results compare favorably with similar tests carried out on the same class of stock, using the P.M.A. standard method. Table 2 shows results obtained from a typical series of tests on the same sample of well beaten kraft stock.

Sheets made as described are perfectly flat and free from cockles, unless made from extremely wet stock when they may be very slightly wavy but not to an extent to affect the strength tests. One or two special characteristics, however, must be noted when test sheets are made up by this method.

First of all higher figures are obtained for both tear and burst tests as compared with tests on sheets made by the P.M.A. method. In the case of the burst test the figures are some 20 to 25 per cent higher and in the case of the tear, 15 to 20 per cent. This is illustrated by the following examples on beaten Kraft pulp.

	Burst	Tear
Rapid drying method	2.16	1.36
P. M. A. standard method	1.76	1.14

Mechanical sheets show similar differences but in either case the proportion is not sufficiently regular to allow for a comparison, by means of a factor, between the Standard and Rapid methods.

A Useful Starting Point

In many ways it is a disadvantage that the results from the two methods cannot be compared, but although the comparison would be interesting, we feel that the P.M.A. method of pulp evaluation, including the standard method of sheet making of which it chiefly consists, is in its early stages. It is not yet sufficiently well established and free from disadvantages to call for its exclusive use. The P.M.A. standard method has served as a useful starting point, but the extension of knowledge on sheet making and pulp evaluation, both here and abroad, indicates that the method requires modification in certain directions, some of which have been indicated in this article, in order to render it more generally applicable in all branches of pulp and stock evaluation.

University of Maine Men

A dinner for Maine men connected in any way with the paper industry will be held in New York during Paper Week. All who attended the similar meeting last year will not want to miss the one this year. The dinner will be held Feb. 16. Those who expect to be in New York on that date should write Merle B. Shaw, 5130 Connecticut Ave., N. W., Washington, D. C., and tell him whether they will be able to attend. Prompt action will be appreciated so that the necessary hotel arrangements can be made.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

For photostatic copies of articles appearing in the Abstract Section, address the chairman of the Abstracts Committee, Dr. Clarence J. West, National Research Council, 21st and B Streets, Washington, D. C. The charge for this service is: Photostats 9 x 11 inches, 18 cents each; 18 x 11 inches, 35 cents each; 22 x 18 inches, 70 cents each; minimum charge, 50 cents. Payment should be made upon receipt of invoice. Copies of United States patents may be obtained from the U. S. Patent Office, Washington, D. C., for 10 cents each. Send currency not stamps.

Alkaline Pulping Process

Process for the Manufacture of Sulphate Pulp. Erik Hagglund. Abo, Finland. **Ger. pat. 515,018 (June 19, 1927).—The invention** concerns the manufacture of sulphate pulp with the use of black liquor for the cooking process, which is freed from the greater part of the organic matters by heating under pressure. The patent is characterized by having a part of the liquor coming from the pressure tank returned to the digester in an uncausticized condition. According to claim number 2, this liquor is returned to the digester without any intermediate treatment and without coming in contact with the air.—J. F. O.

Process for the Utilization of Black Liquor Occurring in the Manufacture of Sulphate Pulp. Erik Hagglund, Abo, Finland. Ger. pat. 518,062 (June 24, 1926).—Addition to Ger. pat. 484.304—The process as of the original patent is changed so that the solution coming from the pressure heating is evaporated to dryness without the preceding causticizing and then the main amount of the acetate is separated from the residue by fractional dissolving out while the remainder is used again in the white liquor after causticizing. For example, 1 liter of black liquor which has been subjected to heating under pressure and contains after analysis 60 grams of sodium acetate and 60 grams of soda is evaporated and the dry residue is heated for an hour at about 300 deg. After the following cooling the finely pulverized mass is treated with 40 c.c. of water whereby about 40 grams of the acetate and about 2 grams of the soda goes into solution. By recrystallization of the raw acetate, an acetate is obtained which is free from soda.—J. F. O.

Recovery of Acetate from the Black Liquor in the Manufacture of Sulphate Pulp. H. Schmidt. Zellstoff Papier, 11, No. 5: 259-260 (May, 1931).—An acetate content in the alkali liquor up to about 15 per cent does not affect the decomposition so that a cooking liquor can be used with a concentration of acetate which will make the recovery of acetate possible. The black liquor is treated at 350 deg. at increased alkalinities and at a pressure of 150 to 200 atmospheres, whereby the main part of the organic matter precipitates out in the form of a carbonaceous or tarry substance. The liquor containing the acetate is used continuously until a concentration of 10 to 15 per cent is reached. A part of this liquor is then removed, about 25 per cent, so that the acetate content in the liquor used remains the same. The treatment of the liquor containing the acetate can be carried out in several ways. By evaporation of this liquor to dryness and then dry distillation, a high yield of acetone is obtained. For the recovery of sodium acetate the liquor can be evaporated until the desired concentration is attained to crystallize out the sodium acetate upon cooling. A very pure acetate, free from soda, can be prepared in the following manner. The liquor is evaporated to dryness and the volatile matter, especially the methanol is caught. The residue is heated until it is carbonized, being careful not to decompose the acetate. The acetate is fractionally dissolved out and in this way separated from the difficultly soluble soda. An example of this process is described.—J. F. O.

Fiber Substance Density of Pulps and Papers. P. S. Billington and E. L. Keller. Tech. Assoc. Papers Series 14: 302-303 (May, 1931); Paper Trade J. 93, No. 7: 45-46 (Aug. 13, 1931).—Values found in the literature and determined by the picnometer method (using a non-polar hydrocarbon oil) are tabulated. In general, the values found in the present investigation were about 1.45 for woods, 1.53 for pulps, and 1.54 to 1.60 for papers, which are not in close agreement with some of the earlier values in the literature, but check closely those of recent workers.—A. P.-C.

Investigation Over the Change of Lignin Content in Spruce Wood as a Result of Various Climatic Conditions. P. Kiason, Cellulosechemie, 12, No. 2, 36-37 (Feb. 1, 1931).—For the determination of lignin, the wood is extracted with ether and the dried wood is hydrolyzed with 66 per cent sulphuric acid for two days at 100 deg. In order to separate the pentosane which is not hydrolyzed, the residue is heated for 12 hours on a steam bath with an 0.5 per cent solution of hydrochloric acid. The remaining lignin is washed, filtered and weighed. Twelve various spruce woods, from different climatic parts of Sweden were analyzed in this manner. The average lignin content of 222 samples was 28.1 per cent. The maximum variation was plus or minus 1 per cent. Climatic conditions thereby exerts no great influence on the lignin content of the wood. The age of the tree also has no influence on the lignin content.—J. F. O.

Power House

Boilers and Steam Generators. Reginald Trautschold. Paper Trade J. 93, No. 2: 26-32 (July 9); No. 6: 55-59 (Aug. 6); and 12: 43-46 (Sept. 17, 1931).—Modern developments, trends and achievements are exemplified by some of the noteworthy installations in pulp and paper mills in North America.—A. P.-C.

Water in Steam Generation. Reginald Trautschold. Paper Trade J. 93, No. 8: 49-53 (Aug. 20); No. 10: 61-65 (Sept. 3, 1931).—A discussion of the effects of the various solids in boiler water and of the treatments by which they can be eliminated or reduced.—A. P.-C.

Trend of Steam Pressure and Temperature in the Paper Industry. J. Van Brunt. Tech. Assoc. Papers Series 14: 280-282 (May, 1931); Paper Trade J. 93, No. 9: 38-40 (Aug. 27, 1931).—A discussion of the correct selection of pressure and equipment for paper mill boiler plants.—A. P.-C.

Water in Paper Making. Reginald Trautschold. Paper Trade J. 93, No. 4: 41-44 (July 23, 1931).—A brief discussion of the importance of the purification of water used for paper making and of the function of filtration in the purification process.—A. P.-C.

Paper Specialties

Method of Making Impregnated Sheets. Louis T. Frederick assignor to Fibroc Insulation Co. U. S. pat. 1,799,506 (April 7, 1931).—Small pieces of leather, canvas, duck, etc., scrap are allowed to fall through a vertical tower having an opening in its side. Close to the tower, and approximately filling the opening is a hollow, stationary drum or cylinder, the portion of the cylinder inside the tower being perforated and the inside of the cylinder being connected to a suction pump. The drum is mounted on a framework at the other end of which is a ro-

tating pulley, and an endless screen belt travels around the drum and pulley. A fabric is brought into contact with the lower run of the wire fabric before it reaches the drum, so that the particles of scrap are drawn onto the fabric by the suction inside the drum. The resultant sheet, after it has passed out of contact with the drum, is sprayed with bakelite and is then passed through a heating chamber to evaporate the solvent. If desired, the material may be cut into sheets and several sheets pressed and heated together to form laminated sheets.—A. P.-C.

Corrugated Cardboard. Jacob Moll. U. S. pat. 1,802,522 (April 28, 1931).—At least one principal or central layer is combined with at least one auxiliary layer, the corrugations of which are of smaller height and pitch than those of the principal layer; or at least two layers of identical section are combined. Preferably, a central principal layer is combined with two outer layers, all three having straight-sided corrugations, the height of the corrugations of the outer layers being about one-half that of the central layer and the pitch of the corrugations of the outer layers being such that each depression of the central layer corresponds to two elevations of the outer layers. The corrugated sheet built up in this manner may be either unfaced, single-faced or double-faced.—A. P.-C.

Waterproof Fibrous Articles. Harold L. Levin assignor to The Flintkote Co. U. S. pat. 1,782,855 (Nov. 25, 1930).—A waterproofing material such as an asphalt dispersion is added to an aqueous stock of fibrous material and fixation of the waterproofing material upon the fibers is effected by a fixing agent formed in situation in the mixture such as by the use of sodium silicate and alum at the isoelectric point of the fixing agent; the mixture thus prepared is forced against a perforated mold to form articles of desired shape—A. P.-C.

Raw Paper for the Manufacture of Paper Which is Sensitive to Light. Zellstoff Papier, 11 No. 4, 206 (April, 1931).—Paper sized with rosin is not suitable when it is to be used for photographic papers sensitive to light, because the light sensitive emulsion becomes oxidized by the rosin and hence it is injurious to the paper. This is also true for papers used in packing plates and paper which is sensitive to light. The sizing should be accomplished according to the French patent 691,394 with carefully prepared fats whose iodine number lies below 5 and has a high molecular weight. Soaps made of natural waxes, free from unsaturated and unoxidizable compounds, can be used. An example is given.—J. F. O.

Dry Plate Paper. H. Postl. Zellstoff Papier, 11, No. 3: 144 (March, 1931).—The paper to be used for wrapping dry plates must be deep black, tough, of a fast color and completely impervious to light, besides being completely free from sand. The paper is made of 50 per cent pure sulphite and the remainder sulphate pulp and colored with oil or lamp black.—J. F. O.

Cement Sack Paper. H. Postl. Zellstoff Papier, 11, No. 3 144-1445 March, 1931).—Cement sack paper must be uneffected by moisture, have a high tearing length, good stretch, high mullen and a high fold. The paper is made from spruce wood sulphate pulp, which, when possible is made into the paper without the intermediate drying of the pulp.—J. F. O.

Manufacture of Board for Boxes. F. Schneider. Wochbl. Papierfabr. 62, No. 16: 375-376 (April 18, 1931).—Box board should possess, low specific weight, uniform strength, bulky feel without the tendency to split, pliable and have the highest possible resistance to water. Old papers with the least amount of loading is used as raw material. The paper is preferably softened in warm water in a spherical digester. The quality of the old paper is improved by the addition of better grades of stock, such as wood pulp, etc. The stock should be beaten for only a short time, about 30 minutes with bars about 8 to 9 millimeters wide. A flat belt is used to dry the board.—J. F. O.

German Building and Insulating Board. Wochbl. Papierfabr. 62, No. 19: 454-455 (May 9, 1931).—The properties and the possibilities for the use of the lignite board are described. The lignite board is composed of organic fibers which have been silicified, and bound together with cement. The weight of the board is 7.5 kilograms per square meter. The advantages are storm proof, fire proof, low heat conductivity, easy to work and resistant to acid and water vapors. The board finds much use in a paper mill because of its isolation properties and its resistance to moisture. It does not hold water drops and hence is very suitable for rooms in which there is a very high moisture content.—J. F. O.

Recent Happenings in the American Insulation Board Industries. Wochbl. Papierfabr. 62, No. 13: (March 28, 1931).—Description of some of the recent insulation board processes, such as Arborite, Fir Tex and Maizewood.—J. F. O.

Processes and Arrangement for the Manufacture of a Transparent Paper. Transkrit A. G. Zurich. Swed. pat. 71,076 (Nov. 18, 1927).—A solid mixture of waxes, oils, fats and coloring matter, at ordinary temperatures, are made liquid by heating and by means of a steeping roll it is brought in contact with the paper. A determined viscosity and a determined temperature of the steeping bath are maintained.—J. F. O.

Process for the Washing of Paper Treated With a Parchmentizing Liquid Under Simultaneous Rubbing Treatment of Same. Heinrich Nicolaus & Co. G.m.b.H. Ger. pat. 520,663 (Jan. 22, 1930).—The rubbing off occurs on both sides in its longitudinal direction for the whole width of the web, periodically changing to the opposite direction.—J. F. O.

Process for the Manufacture of Clear and Sharply Etched Designs on Paper. I. G. Farbenindustrie, A. G. Frankfurt a.M. Ger. pat. 514,626. (June 15, 1928)—Only the outside layer of stock of the paper is colored with the etching color matter. —J. F. O.

Process for the Water Marking of a Paper. Societe L. Chambon, Paris. Ger. pat. 516,619 (March 27, 1929).—The sheet is firmly fastened in position and by a movable roll is kept tightly stretched, while the water mark is put on.—J. F. O.

Mottling Material for the Manufacture of Mottled Papers. I. G. Farbenindustrie A. G. Frankfurt a.M. Ger. pat. 516,029 (Aug. 12, 1928).—The mottling material consists of uncolored or colored finely divided leather. For example: chrome leather shavings are freed from acids and neutralized, then colored with a suitable dye, cut to the proper length and added to the beater furnish whereupon the manufacture of the paper is carried out in the usual manner.—J. F. O.

Process for the Manufacture of Paper Having Designs Thereon. Papierfabriken in Friedland. Ger. pat. 514,331 (March 29, 1928).—The sheet of paper is pasted in a moist condition at the wet press of the paper machine or on the pasting machine, than again pulled apart, and dried in a drying chamber and then again run through the calender of the desired type, whereby the design obtained by the pasting is retained.—J. F. O.

Process for the Manufacture of Colored Paper With Designs Thereon. Ludwig Henneberger, Munich. Ger. pat. 517,137 (April 7, 1929).—In water with the hardness removed, oil colors are dropped with alkali as the means to make the color stay on the paper which is drawn over the surface of the liquid.—J. F. O.

Printing Papers With a Prepared Surface. Zellstoff Papier 11, No. 5: 264-265 (May, 1931).—The author describes the most important kinds of coated papers, including their difference with the usual printing papers. The methods of coating are given and the uses of the finished paper. In multi-colored papers, the coating must be capable of absorption. With fine grained pigments such as Blanc Fixe more impressions can be made from the same plate than with kaolin coated papers. Highly glazed papers obtain their gloss through friction or stone rolls.—J. F. O.

Mechanism for Cutting Roofing Elements. Robert T. Johnston assignor to The Patent and Licensing Corp. U. S. pat. 1,816,329 (July 28, 1931).—The machine is provided with two pairs of adjacently disposed feed rolls. On one of the pairs there are segmental cutters for cutting spaced pairs of slits through the sheet at intervals and for trimming the side edges of the sheet. The other pair of rolls has axial cutters to cut slits joining the ends of the pairs of slits formed by the first cutters and for cutting the edge trimmings into lengths. Fingers carried by one of the second pair of rolls are projected through the cut-out portions to remove the pieces of material from the sheet.—A. P.-C.

Method Of and Means For Saturating Fibrous Materials in the Production of Prepared Roofing Materials. Robert Maclean assignor to Amalgamated Roofing Co. U. S. pat. 1,816,596 (July 28, 1931).—A traveling web is saturated by spraying with a saturant as it passes over a tank which receives the excess of saturant.—A. P.-C.

Waterproof Construction Material. John H. Plunkett assignor to The Flintkote Co. U. S. pat. 1,813,081 (July 7, 1931).—A building material suitable as a backing for plaster, stucco and the like, comprises lengths of felted fibrous material saturated with a waterproofing substance and coated on its surfaces with a layer of bituminous material, one of the coated surfaces having affixed thereto throughout its entire extent a sheet of water-absorptive, smooth, and relatively tough paper.—A. P.-C.

Colored Roofing Sheet Material. Albert L. Clapp assignor to The Flintkote Co. U. S. pat. 1,811,613 (June 23, 1931).—A "daub coat" for application to fibrous stock as it is being sheeted on a paper machine comprises an aqueous pulp having a relatively small proportion of fibrous material such as cellulosic and asbestos fiber capable of being formed with the stock into a sheet and having a relatively large amount of water-insoluble coloring matter such as copper carbonate and waterproofing material such as asphalt fixed to the fiber by a precipitate such as sizing.—A. P.-C.

Acoustical Board. Franklin M. Dietz assignor to Johns-Manville Corp. U. S. pat. 1,811,385 (June 23, 1931).—Acoustical board is made with its surface broken by a number of channels forming a recurrent pattern of polygonal units, the channels bounding each unit being prolonged into adjacent units.—A. P.-C.

Use of Asphalt Emulsions in the Paper Industry. Anon. Paper Maker & Brit. Paper Trade J. 82, No. 3: lxvii-lxviii (Sept. 1, 1931).—A brief outline of the manufacture of asphalt-impregnated paper by the use of asphalt emulsions by the so-called "K.B." process, and of the applications of the process and its advantages over impregnation with hot liquid asphalt.—A. P.-C.

Wrapping Paper for the Insulation of Electric Cables. Carl August Haanen and Hans Meurer assignors to Felten and Guilleaume Carlswerk Aktien Gesellschaft. U. S. pat. 1,808,407 (June 2, 1931).—The resistance to puncture of wrapping paper for insulating electric cables is increased by subjecting the paper to a pressure which increases the density of the paper above 0.90 and still retains the necessary tensile strength for wrapping the conductor.—A. P.-C.

Process of Decorating Paper. Harry M. Ross assignor of one-half to Beveridge Paper Co. U. S. pat. 1,809,146 (June 9, 1931). —The paper is passed about a brushing roll having a tool-marked surface. A thin film of coloring material is applied to the roll so as to cause it to apply the color to the paper, and the roll is operated at a greater speed than the paper passing about it to cause the tool-marked roll to streak the color over the surface of the paper.—A. P.-C.

Process of Decorating Paper. Harry M. Ross assignor of one-half to Beveridge Paper Co. U. S. pat. 1,810,145 (June 16, 1931).—The paper is passed under an embossing roll for forming elevations and depressions therein, and a coloring material is applied to the protruding surface of the embossing roll so as to cause such coloring material to color the depressions formed in the paper. The latter is then passed around a coloring roll which brings a second coloring material into direct contact with the paper, which is passed at such a speed that the coloring material contacts only with the elevations in the paper and shades off into the depressions.—A. P.-C.

Laminated Ornamental Paper. Cassius M. Bryan assignor to Strathmore Paper Co. U. S. pat. 1,818,459 (Aug. 11, 1931).—The purpose of the machine is to produce a laminated paper with designs between the plies. Two webs of paper are unwound from supply rolls. The required designs are applied to one side of one of the webs which is also coated with adhesive; the two webs are brought together, with the adhesive-coated surface inside, and the two-ply sheet thus formed is pressed to consolidate it into a unitary sheet, passed around drying rolls and wound.—A. P.-C.

Process and Machine for Making Spacing Members for Shipping Containers. Calvin A. Agar. U. S. pat. 1,815,887 (July 28, 1931).—Adhesive is applied to the corrugated surfaces of a number of single-faced corrugated paper webs; each web is bent to angular form; and the facing sheet of each web is pressed against the corrugated face of the adjacent web with the bends in registry to effect glueing of all the web together in bent position.—A. P.-C.

Method Of and Means For Joining Conduits. Bertwell C. Root assignor to Brown Co. U. S. pat. 1,809,313 (June 9, 1931). —Fibrous conduits are prepared for end joining by pegging a fibrous collar externally thereto, substantially flush with the ends. The conduit is then impregnated with waterproofing material.—A. P.-C.

Decorative and Ornamental Material Suitable for Use as a Wall Covering. Albert S. Allen assignor to Du Pont Cellophane Co., Inc. U. S. pat. 1,802,547 (April 28, 1931).—A base such as paper is provided with a coating of scintillating particles of regenerated cellulose, which may be colored.—A. P.-C.

Paper Containing Filler and Wax. George J. Manson assignor to Manson Chemical Co. U. S. pat. 1,800,551 (April 14, 1931).—A paper suitable for use in printing, lithographing, etc., contains a wax-retaining filler such as talc or colloidal clay and a proportion of wax in excess of that which could be incorporated in the paper except for the presence of the filler.—A. P.-C.

Strawboard Containers for Food Materials. Sidney D. Wells assignor to Paper Mill Laboratories, Inc. U. S. pat. 1,801,704 (April 21, 1931).—Receptacles for holding eggs in cold storage or for other food products are formed of odorless and sterile strawboard pulp comprising new straw disintegrated, steam cooked and disinfected and containing sufficient chlorine to destroy fungi and bacteria and remaining odorless under cold storage conditions. The pulp may be treated with 0.1% to 5% of its dry weight of chlorine, just as it enters the vat at the wet end of the paper machine.—A. P.-C.

Sheet-Transfer Mechanism for Paper Boards. Daniel M. Sutherland, Jr. U. S. pat. 1,801,822 (April 21, 1931).—The transfer mechanism comprises a conveyor or carriage, running on stationary rails, for taking the sheets from the wet machine and placing them in a pile on a truck; and another conveyor, running on another set of stationary rails, for taking the sheets from the pile and introducing them between the plates of the drier. In operation, a sheet of pulp from the wet machine is received by the loader and deposited on the truck, and this operation is repeated until the truck is fully loaded. The truck then moves forward to a position such that the second loader can pick up the sheets one by one and introduce them into the drier. While the latter operation is being carried out, another truck is being loaded from the wet machine.—A. P.-C.

Production of Building Board from Resinous Woods. Carl J. H. Nordenswan assignor to Hercules Powder Co. U. S. pat. 1,805,833 (May 19, 1931).—Chips of highly resinous woods are heated to remove the relatively volatile constituents (such as turpentine and pine oil), treated with a solvent to extract the

less volatile resinous constituents (such as rosin) heated to remove the residual solvent, defibered (for instance, in a Bauer or rod mill), and finally formed into sheets, pressed and dried.—A. P.-C.

Filler Composition for Fiberboard Surfaces. Daniel C. Bruce. U. S. pat. 1,804,245 (May 5, 1931).—Water, flour, whiting, glucose (or dextrin), borax soap, glycerin, a volatile hydrocarbon such as gasoline or kerosene and comminuted fibrous materials are used together.—A. P.-C.

Board Making Machine. Charles A. Upson and Otto R. Winter assignors to The Upson Co. U. S. pat. 1,806,006 (May 19, 1931).—The patent covers various details of construction of a machine designed for making continuous lengths of heavy fiber board or heavy fiber sheets. One object is to provide a machine that will form such a product under great pressure and as a continuous run. The central feature of the machine is a pressure or forming chamber into which there is fed a volume of stock with an excess of water, between the larger opening ends of the flights of two endless carriers, which converge towards the delivery end. Side walls for the pressure chamber are supplied by cheek plates secured to the frame of the machine.—A. P.-C.

Carbon Paper and Coating Composition Therefor. Samuel A. Neidich assignor to Neidich Process Co. U. S. pats. 1,800,500 and 1,800,561 (April 14, 1931).—*No. 1,800,560*—A web of flexible material adapted to receive type impressions includes a gummy material such as gutta-percha, forming a smooth face on the web and enhancing its normal resistance to such impressions, and is provided with a coating of transfer material on the opposite face. *No. 1,800,561*—A carbon paper coating composition consists of: gutta-percha 30 parts, lampblack 17 parts, carnauba was 30 parts and petrolatum 40 parts.—A. P.-C.

Sheet Material for Drawing and Tracing. Kalle & Co. A. G. Belg. pat. 375,728 (Jan. 31, 1931).—The base sheet, consisting of hydrocellulose, is coated with a granular layer consisting chiefly of cellulose derivatives and/or resins, to which may be added small quantities of loading materials such as starch, talc, chalk or colloidal calcium carbonate.—A. P.-C.

Process and Apparatus for Washing Parchmentized Paper. Heinrich Nicolaus & Co. G.m.b.H. Belg. pat. 373,591 (Oct. 31, 1930).—The rubbing action (produced by rolls, extending the whole width of the sheet) during the washing of paper treated with a parchmentizing agent is exerted periodically and alternately in opposite directions. While it is being passed through the washing baths the sheet is held between two conveying bands which are permeable to the washing liquids.—A. P.-C.

New Imitation Parchment Paper. Ætablissements Dalle Frères et Lecomte. Belg. pat. 374,393 (Nov. 30, 1930).—Sulphuric acid of 45° to 55° Baumé is used, which permits of treating papers which could not stand the action of the 55° to 57° Baumé acid generally used—A. P.-C.

Miscellaneous

Burning Waste Wood in the Pulp and Paper Industry. H. W. Beecher. Tech. Assoc. Papers Series 14: 220-222 (May, 1931); Paper Trade J. 93, No. 8: 40-42 (Aug. 20, 1931).—A brief discussion of the essentials of good practice.—A. P.-C.

Hard Rubber (Ebonite) in the Pulp and Paper Industry. C. S. Snider. Pulp Paper Mag. Can. 30: 1022-1023 (Sept. 10, 1931).—A review of recent uses and new equipment made of hard rubber, with which the pulp and paper industry should be familiar.—A. P.-C.

Oxford Mill Improved. Anon. Paper Mill 54, No. 32: 4, 14, 17 (Aug. 8, 1931).—A description of the new boiler plant and new research and engineering building at the Rumford, Me., mill of the Oxford Paper Co.—A. P.-C.

Busy Pulp Mill. John J. O'Brien. Paper Mill 54, No. 35: 5, 12 (Aug. 29, 1931).—A description of the mill of the Penobscot Chemical Fibre Co., Great Works, Me.—A. P.-C.

Modern Board Mill. Harry E. Weston. Paper Industry 13: 748-750 (Sept. 1931).—A description of the new board mill of the Oswego Board Corp., at Oswego, N. Y.—A. P.-C.

Northern Paper Mills Builds New Laboratory. Anon. Paper Industry 13: 752-752a (Sept. 1931).—A brief description of the new laboratory of Northern Paper Mills, Green Bay, Wis., and its facilities.—A. P.-C.

Up-to-date Box Manufacturing Plant. Norman MacKinnon, Pulp Paper Mag. Can. 30: 873-875 (July 30, 1931).—A description of the Montreal plant of the Standard Paper Box, Ltd.—A. P.-C.

Stories of British Paper Making. Esk. Mill, Penicuik. Anon. World's Paper Trade Rev. 96: 526-530 (Aug. 14, 1931).—A. P.-C.

Billeruds New Kraft Mill. Anon. World's Paper Trade Rev. 96: 596-602 (Aug. 21, 1931).—A brief description of the new 60-ton krapt pulp and paper mill at Saffle, Sweden—A. P.-C.

Research and Development in the Pulp and Paper Industry—A Look Ahead. Gustavus J. Esselen. Tech. Assoc. Papers Series 14: 295-296 (May, 1931); Paper Trade J. 93, No. 6: 49-50 (Aug. 6, 1931); Pulp Paper Mag. Can. 30: 953-955 (Aug. 20, 1931).—A brief discussion of some of the trends which seem to be looming up regarding paper making materials, synthetic cellulose and lignin as a base for chemical industry.—A. P.-C.

United States Patents on Paper Making. Second Quarter, 1931. Clarence J. West. Paper Trade J. 93, No. 6: 43-45 (Aug. 6, 1931).—A list, in numerical sequence of patents relative to pulp and paper making issued in April, May and June, 1931.—A. P.-C.

Process for the Preparation of Pulp Bales. Konigsberg Zellstofffabriken und Chemische Werke Koholyt A. G. and F. Klein, Berlin. Ger. pat. 512,380 (Sept. 6, 1928).—The single sheets of a finished bale are continuously exchanged with those from the longitudinal cutter and the pile thus formed is put under a bale press.—J. F. O.

Durability of Paper. Korn. Papier-Fabr. 29, No. 10: 155-156 (March 8, 1931); Wochbl Papierfabr. 62, No. 9: 198-199 (March, 1931).—The author reviews the methods used in the United States pertaining to the classification of the durability of paper. They are different from those methods used in Germany which classes a paper according to its fiber content and not according to its chemical properties, such as, rosin content, copper number, etc. Renunciation of the content of rag fiber in papers of the highest class seems risky since chemical pulps have as yet not come up to the high properties of rag stock.—J. F. O.

Archive Conserving or Library Methods. H. Frederking. Papier-Fabr. 29, No. 8: 117-124 (Feb. 22, 1931).—Lecture given at the meeting of the Berlin district of "des Vereins der Zellstoff und Papier-Chemiker und Ingenieure" concerning the methods and value of a library system.—J. F. O.

International Union of Chemistry. Einar Biilmann. Papier-Fabr. 29, No. 9: 136-141 (Feb. 29, 1931).—The papers read at the meeting are given, those concerning cellulose and its application to the paper and pulp industry are in detail. E. Heuser gave a paper on "The relations between the properties of the cellulose used and its industrial application," which contains valuable facts.—J. F. O.

Rosin in Pulp. E. Richter, Wochbl. Papierfabr. 69, No. 23: 549-550 (June 6, 1931).—Through mechanical treatment, without beating, the ether extract of the easy bleaching Ritter-Kellner pulp decreased from 0.9-1.4 to 0.34-0.6 per cent; however this was not always the case. After three years of investigation, no difference between winter and summer wood could be determined. By allowing the wood to stand in storage the ether extract decreased but the alcohol extract increased, the total remaining the same. The addition of kerosene in the digester or at the paper machine had no result. By the use of warm water or air and steam the ether extract could be decreased so that the pulp could be used for the manufacture of tissue paper.—J. F. O.

Section of the

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Power Cost Accounts*

II. Generation of Power and Other Steam Uses

By John Whitmore[1]

(Continued from the issue of December 3, 1931)

"It is not enough to know that the total cost of power for the month is so many dollars, of which so much is fixed charges, so much fuel, etc. . . . Individual unit costs should be determined for electricity, high- and low-pressure steam, refrigeration, compressed air and other services. These should be charged to consuming departments on the basis of quantities actually used, as determined by meter readings." (Editorial, POWER, May 12, 1931.)

The British thermal unit is stated to be the heat required to raise the temperature of one pound of water one degree Fahrenheit, but this is slightly qualified even within the range of temperatures to which it is practically applicable. Throughout the scale the heat required to raise the temperature of one pound of water one degree Fahrenheit changes gradually. Also it is said that "the mean B.t.u. is defined as 1/180 part of the heat required to raise the temperature of one pound of water from 32 degrees to 212 degrees." Practically the definition first stated above may be regarded as actual up to 212 degrees and somewhat beyond that temperature.

The British thermal unit has also its mechanical equivalent, which is stated as 778 foot-pounds. The commercial engine horse-power is fixed at 33,000 foot-pounds per minute. This gives 42,416 B.t.u, as the equivalent of one engine-horse-power-minute, or 2545 B.t.u. as the equivalent of one engine-horse-power-hour.

The kilowatt of electrical energy equals 1.34 horse-power or 44,220 foot-pounds per minute. The kw. minute is therefore the equivalent of 57 B.t.u. and the kw. hour the equivalent of 3414 B.t.u.

The horse-power being defined as 33,000 foot-pounds per minute, there are in the determination of horse-power developed, two factors, pressure and distance, and the pressure being first expressed in pounds per square inch, it follows that this is to be multiplied by the square inches of surface upon which the pressure is effective. In the reciprocating engine, power is developed by the pressure of steam upon the piston in the cylinder. This pressure changes throughout the piston-stroke, and an instrument called a steam engine indicator is used to determine "the mean effective pressure." From the mean effective pressure and the piston-travel in feet per minute, the horse-power developed is calculated.

If power is then transmitted throughout a plant by means of shafting, belting, and pulleys, it is against the determination of horse-power developed by the engine that the economy of its uses must be measured. If the engine drives an electric generator or air compressor, its output of power is accounted for by these uses, and thereafter it is the output of electric current or compressed air that is to be accounted for.

Steam turbines are said to be "most efficiently used direct connected to electrical generators, centrifugal pumps, centrifugal compressors, and ship propellers." If a steam turbine is direct connected to another machine, the two are treated as a unit. If, as is most often the case, the turbine drives an electrical generator, the cost of the whole operation of turbine and generator, determined in a single account, is the cost of the electrical output, and it is this output that is to be accounted for. It is exactly the same thing if a reciprocating engine drives an electric generator.

Either reciprocating engines or turbines may be condensing or non-condensing.

The non-condensing engine or turbine uses steam to generate power, and then delivers the steam as exhaust steam, at a pressure and temperature which are lower proportionately to the efficiency of the engine or turbine, but potentially of the same value, proportionately to its remaining heat content. The power developed in this case is limited by the back-pressure of the exhaust steam.

The condensing engine or turbine is equipped with condensing apparatus, by means of which the exhaust steam is immediately condensed, and a vacuum substituted for the back-pressure of the non-condensing engine or turbine. Under these conditions there is a considerable increase in the power developed, but no steam survives for any further uses. The condensing of the steam is effected by means of large quantities of cold water. The latent heat of evaporation is given up when the steam is condensed, and in the engine or turbine condenser it is absorbed by the condensing water and is lost. If the exhaust steam is not condensed, but delivered as steam for further uses, the latent heat of evaporation may possibly almost all be serviceable

* From The Journal of Accountancy, Nov., 1931.
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for heating purposes. This depends, of course, upon there being work of heating for which it can be used.

The heat in steam, as generated in the boilers, is therefore put to two quite distinct uses; it may be converted into power, or it may be transferred simply as heat, and it is variously so transferred to water for the boilers, to the atmosphere for necessary heating, and to various materials in manufacturing processes. Steam, as generated in the boilers may be used to produce power only, or it may be used as live steam for heating purposes only. Or it may be used first to produce power, and then as exhaust steam for heating.

It may be used more than once at successively lower pressures to produce power in multiple stage turbines and compound engines. With this the accounting is scarcely concerned, inasmuch as the turbine or engine is a unit and a single account covers its total operation. There is however, another way in which the same steam is used more than once to produce power. The exhaust steam from a reciprocating engine may be used to operate a low-pressure turbine.

The heat content of exhaust steam is commonly spoken of as being about 90 per cent of the heat content of the steam as it enters the engine. On page 1179 of Marks' Handbook, there is a table "Comparative results of steam engine tests: Saturated vs. Superheated Steam", which indicates the following:

	Initial pressure (abs.) pounds per sq. inch	Superheat degrees Fahrenheit	Average B.t.u. consumed per l. h.p. hr.	Recovery
Simple non-condensing engines	150-180	0	24,780	10.27%
	150-180	260	19,620	12.97%

These figures are said to represent the "best current practice." The figure of 90 percent in ordinary good practice is therefore presumably fairly close.

Inasmuch as the value of exhaust steam is to be considered in comparison with the gain in production of power by operating the engine condensing (less the expense of operating the condenser and all apparatus in connection therewith), it may be noted here that the same table indicates the following in regard to condensing engines:

	Initial pressure (abs.) pounds per sq. inch	Superheat degrees Fahrenheit	Average B.t.u. consumed per l. h.p. hr.	Recovery
Simple condensing engines	120-150	0	19,200	13.25%
	120-150	260	14,400	17.7%
Compound condensing engines	120-180	0	17,340	14.65%
	120-180	260	13,770	18.5%

With so great waste in the condensation of steam after its use in engines of even the highest efficiency, and with the possibility of an even greater waste in operating engines non-condensing and having insufficient uses for the exhaust steam delivered, there is in every manufacturing plant the very important problem of balancing the generation of power and the provision of steam for other uses. The matter assumes the most various aspects and leads to the most various conclusions. Much has been written about so-called "by-product power", meaning power generated by the use of steam which is thereafter used for other purposes. Plainly, such power is not a by-product in any strict sense. It is the immediate product of the steam in its first state, and reduces its value in an inevitable measure. But the enthusiasm for "by-product power" may be contrasted with the fact that some important plants purchase power and operate boilers solely for process steam.

Apparently the most important single means of balancing the generation of power and the provision of steam for other uses is the "bleeder" turbine, permitting the extraction of steam after it has been used to generate power, but before its usefulness for this purpose is exhausted.

Also power may be produced partly by condensing and partly by non-condensing engines or turbines; and it may be partly purchased and partly generated within the plant. Under certain conditions of intermittent loads a steam accumulator may be used. An internal combustion engine has an obvious possible place in plans for balancing production of power and production of process steam.

An essential provision for the accomplishment of the steam accounting is a chart of all steam transmission lines from the generation of steam in the boilers, through all its uses, showing the direction of the flow, the normal pressure, the locations of flow meters and of any reducing valves, or in long steam lines, possibly superheaters. This chart must be blue-printed, and all metered or calculated quantities and average pressures and temperatures of steam transferred in the month must be stated on a copy of the print at the close of the month by the power department for the use of the power accountant.

Having now all the quantities and average pressures and temperatures taken for use and delivered for further use in the month, there remains the pricing of the steam under all conditions. I have suggested that steam from the boilers be charged to all its original uses at a standard price per million British thermal units.

The departments and processes using exhaust steam can take it at the standard price per million British thermal units, if this will result in their heating work costing them no more than the same heating work would cost them accomplished in any other way. If their needs for process steam are intermittent so that they could not normally be provided for without waste in the intervals of low demand, and if the power plant arrangements are such that waste has actually to be borne, a higher price than the standard price per million B.t.u. may be perfectly proper. If the power plant arrangements are such that exhaust steam is not wasted in the intervals of low process steam demand, then no more than the standard price per million B.t.u. should be charged.

The engine or turbine and the manufacturing department must be regarded as quite independent units, which will deal with each other if it is for their mutual advantage, while neither will allow the unit cost of its own product to be increased for the benefit of the other. This is a necessary condition of the full responsibility of each department for its own costs.

The operation of a non-condensing engine is justified if according to the most careful calculation that can be made, the credit to the engine operation through charges to departments and processes for exhaust steam priced according to strict rules, will reduce the unit cost of power below what it would be, operating a condensing engine.

Assuming that there is loss of exhaust steam and that the question consequently arises whether this loss is to be borne entirely by the engine operation, without compensation through a higher price for steam actually used by manufacturing departments, such question might be answered, first, by considering and calculating what the cost of process steam actually used would be per million B.t.u. if a low-pressure boiler were operated solely for process steam; and second, by considering whether heat other than steam heat could be used and what its cost would be. All the steps that I am suggesting seem to be absolutely necessary to determine the most economical means of operation. It is no accidental coincidence that they are at the same time the steps that are necessary in order to accomplish a true accounting for the expenditures. I do not believe it is too much to say that the two will always be found to coincide. As I proceed I shall have occasion to point out other examples of this.

Extracted or bled steam may also be credited to turbine or compound engine, at the standard price per million available B.t.u. contained in it, but not with the effect of increasing the cost of the unit of power developed. The engine or turbine having nothing to gain by the extraction of steam, must not be permitted to lose thereby. If in its construction additional cost is incurred to enable it to deliver, or if in its operation lowered efficiency occurs through delivering extracted steam, the latter must be credited at a price which will compensate for these disadvantages. This will result in a true showing of the respective economies, inasmuch as there is no expense of process steam in this connection when the demand ceases, nor relatively increased expense when the demand is low.

The million B.t.u. in exhaust steam may have the same value as a million B.t.u. in live steam, if the exhaust is to be used for process purposes but not if it is to be used again to generate power. In the latter case, the initial pressure is an important factor in the value. The exhaust from a reciprocating engine may be charged to process at the standard price per million B.t.u., but if it were so charged to a low-pressure turbine, the engine would show a low cost for power and the turbine a very high cost. The first would bear perhaps ten per cent of the steam cost, and the second ninety per cent. Marks' Mechanical Engineers' Handbook (p.1227) says the additional capacity secured by the addition of the turbine is usually about 100 per cent. The low-pressure turbine operates condensing.

Wherever a turbine receives exhaust steam from a non-condensing engine it will be best to endeavor to cover the two in a single account, so that no entry transferring exhaust from one to the other will arise. This is simple in the case of a low-pressure turbine operating solely with exhaust steam. I think it may also be done where a bleeder turbine takes exhaust steam intermittently. If under any conditions it should be necessary to credit exhaust to non-condensing engine and debit it to the turbine this would necessarily be done at a price sufficiently below the standard price per million B.t.u. to make the condensing loss fall proportionately on the total power developed from the steam which ultimately goes to the turbine condenser.

The accounting is then to be continued in exactly the same manner as before, if a department using either live or exhaust or extracted steam delivers it again for any other purpose; or if the process steam lines deliver condensate having a valuable heat content for return to the boilers. In the article "How Kelvinator handles power" in "Industrial Management", June, 1929, already referred to, it is stated that "85 percent of the steam is returned to the heater as condensate at a comparatively high temperature."

The operation of a non-condensing engine is justified by the average credit that it can receive for exhaust steam throughout the year, and there will inevitably be considerable variations from month to month and from season to season. I think it is advisable that non-condensing engine or turbine shall in each month receive the average calculated credit, so that the cost of power shall not be raised or lowered as the uses for exhaust steam are greater in one month than in another. At the same time the departments and processes must be charged with steam as they use it. An intervening account may be used to effect both these purposes. The average calculated credit for exhaust can in each month be given to engine or turbine and the same debited to such intervening account, and actual consumptions credited thereto and debited departments and processes. Such an account would carry a steam balance in suspense temporarily, operating to equalize the steam credits to engine or turbine throughout the year, leaving the power cost figures, to this extent, more actually comparable from month to month.

Whenever steam, or power in any form, is to be credited to one account and debited to another, metering is of course desirable. Whenever metering is not provided for, and calculations have to be used, the operation of the accounts will provide a check upon such calculations, for if they are incorrect one cost is overstated and another understated, and this, unless it is slight, will probably be recognizable. Rarely at first can one get all the metering of steam, or even of electric current, that one could desire, and whenever meterings are not available, and the power engineer can furnish calculations, one must work with these, and if all that is possible is done with these in the meantime, the results will before long surely justify all metering that is necessary.

Metering moreover is not serviceable only for the construction of the accounts and for accuracy in the determination of costs. Probably in every place where it is useful for these purposes, it is also useful and of course in many places absolutely necessary, for operating control. Metering of steam and power to manufacturing departments is also essential to their economical use. It has been said that manufacturing departments are great wasters of power. Two things are necessary to cure this. First, the charges to the departments must be unquestionable, both as to quantities and prices; and, second, there must be standards against which the economy of the consumption can be measured. As to the first of these, I am trying to suggest in this article how it is to be accomplished; the second I must consider in a later article.

I will close the present article with a summary of the accounting procedure necessary to the operations from the point at which steam is delivered by the boilers, to its uses in generating power, or its delivery to departments for heating and process work.

We have in the preceding article assumed that steam is metered from the boilers, and that inasmuch as it is inevitably to some extent thereafter divided for different uses, there shall be sufficient metering (minor uses being sometimes calculated) so that closely correct quantities shall be charged to each, and especially, that correct quantities shall be charged to each engine and turbine. There must then be an account or a series of accounts for these. If condensing engine or turbine is operated singly, and the steam supplied to it by the boilers is not subsequently reduced by extraction, or added to by supply from any other source, and if its individual output of power is recorded, these conditions give a perfectly simple account and determination of the unit cost of power developed. If however, there is valuable heat in the water from the condensing of the exhaust, a credit for this is to be provided.

If a prime mover simply drives a generator or air compressor, a single account will cover both to give the unit cost of electric power or compressed air. If two or more generators, with their prime movers, are operated in conjunction with each other to give a single output of electric power, a single account may be kept for their total operation.* Where generators are connected in parallel, power being transferred between them as necessary, a single account is the only procedure possible.

If the exhaust steam from a reciprocating engine is used to drive a low-pressure turbine, a single account for the two will I think always be desirable. The power output of

* Just as a single account may be kept for two or more boilers, but in either case, a separate account for each unit is desirable, if input and output of each are known. Or a single account may be kept with a subsidiary record to show the performance of each unit.

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the turbine may be credited to the account at a standard price and the balance of the account will then be the cost of the power output of the engine.

If a bleeder turbine takes exhaust steam from a non-condensing engine intermittently, I believe a single account for the two is still desirable. Such an account would be debited with the expenses of both units, and with the live steam furnished to both units; and would be credited with exhaust steam from the engine or bled steam from the turbine, delivered to the process steam lines, and would be credited with the total power developed.

The term "a single account" as used in the foregoing paragraphs means a single principal account, which may have as many subsidiary accounts as are convenient to effect any desired classification of the expenses or credits. But these subsidiary accounts are merely intermediate and at the end of the month are closed into the single principal account.

When operating expenses are common to two or more accounts, such expenses must be divided between the accounts in proportions determined in consultation with the power engineer. I have dealt fully with the pricing of exhaust and extracted steam supplied to heating and process lines and delivered to departments and uses, and with offsetting credits for steam or condensate delivered by them. Steam so delivered must be metered at the point of delivery to the department to be held responsible for the economy of its use. From the month's report of meterings and any supplementary calculations, as above described, and with the prices determined according to the rules herein suggested, or necessary adaptation of them, all the necessary journal entries can be made at the close of the month without any difficulty at all.

The following determinations should be stated monthly, and tabulated in comparative form for the months throughout the year:

1—The electrical current purchased in the month, its cost in total and per kilowatt hour.
2—The electrical current generated in the month, its cost in total and per kilowatt hour.
3—The cubic feet of free air compressed in the month, its cost in total and per 1,000 cubic feet.
4—The mechanical power developed in the month to be transmitted by shafting, belting, and pulleys, its cost in total and per horsepower hour developed.
5—The following steam summary:

	Pounds	B.t.u. Contents (millions)	Standard Cost per Million B.t.u.	Amount
Generated in boilers	.....	.....	.....	.....
Delivered to condensing prime movers	.....	.....	.....	.....
Delivered to other uses, not yielding exhaust steam for further use	.....	.....	.....	.....
Total not yielding exhaust steam	.....	.....	.....	.....
Balance	.....	.....	.....	.....
Consumed in generating power	.....	.....	.....	.....
Delivered for heating and manufacturing processes	.....	.....	.....	.....
Lost to atmosphere	.....	.....	.....	.....

It is here the final item, that is in grave need of being stated in quantity and money figures wherever the condition which it refers to, exists. In the course of this article I have pointed out that exhaust steam may under certain conditions be chargeable to processes at a price in excess of the standard cost per million B.t.u. Nevertheless I think it best to use only standard costs in the foregoing steam summary. A notation may be made of the difference in the charge for steam delivered for heating and manufacturing processes, if there is such a difference.

It is my intention in a final article to consider the accounts in relation to the transmission and application of power.

Obituary

John F. Kuster

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 14, 1931—Members of the paper trade and other friends of John F. Kuster, 47, treasurer of the Andrews Paper Company, were surprised and pained to learn of his death, which occurred December 10. The cause was monoxide gas. His body was found on the running board of his automobile in the garage at his residence, 5 Chestnut street, Salem, Mass., at 2 p. m. Mr. Kuster was a member of the New England Paper Merchants Association and the Boston Paper Trade Association. He was a director of the L. B. Philbrick Company, paper dealers, Salem. He is survived by a wife, Mrs. Frances Kuster, and a son, John F. Kuster, Jr.

At the funeral, held Saturday from his late residence, with requiem high mass at St. James Church, Salem, there was a large attendance, including associates from the Andrews Paper Company. The New England Paper Merchants Association was officially represented by Edward Sullivan, of the L. B. Philbrick Company, Salem, and William W. Jenks, of Stimpson & Co., Inc., Boston. The office of the Andrews Paper Company was closed out of respect to the memory of their late treasurer.

Frank L. Scott

Frank L. Scott, paper broker, telegraphed to his son, Frank L. Scott Jr., a Dartmouth student, on Thursday of last week that he wished to see him on "important matters" and to come to New York. Complying, the son arrived here from Hanover, N. H., Friday, called at the offices of his father's concern on the sixteenth floor of 270 Madison Avenue and found his parent dead.

Mr. Scott had killed himself with a pistol because of insomnia, according to the police and Chief Medical Examiner Charles Norris. Instead of sleeping at his apartment at 324 East 41st street, it had been his habit of late to sleep on a cot in his private office in the Madison Avenue building.

Friday morning, when the door of his private office was found to be locked, no attempt was made to enter the office until after the luncheon hour. At 1:55 P. M., young Mr. Scott having arrived, the door was opened with a pass key and the body was found, fully clad except for a coat, on a divan. An automatic pistol lay on the floor near his right hand.

Mr. Scott was 51 years old. A representative of Frank L. Scott, Inc., of which he was the head, declared the concern's financial condition was "A1" and that his suffering from insomnia had been well known to his family and friends. He is survived by his widow, his son and his mother.

W. A. Miller

The Ontario paper trade suffered a loss on December 11 when John W. A. Miller, manager of J. H. McNairn, Ltd., wax paper manufacturers, 7 Jarvis Street, Toronto, died suddenly at his residence, 151 Strathallan Boulevard. His funeral at Mount Pleasant cemetery was attended by many in the paper trade in Toronto and outside points. Death ensued after a few days' illness. The late Mr. Miller was widely known in the paper industry and was at one time with Cutters Limited. He had been manager of J. H. McNairn, Ltd., for some years and was considered an expert wax paper manufacturer. He was prominent in church and fraternal organizations in the city.

Copper Pipe and Fittings in Paper Industry*

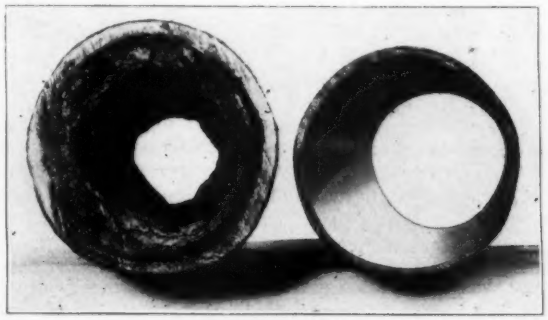
By L. M. Young[1]

Cleanliness is a prime factor in paper making today, and of such importance is it, that it is the medium used for rating paper mills. It is a fact that considerable money is spent to purify and filter water for paper mill use but after this operation of purification, it is put in contact with, or delivered through metal conductors that are subject to chemical change due to the action of natural forces, such as the surrounding atmosphere which is often heavily charged with acid or from the water itself which is passing through them. In other words, the metal from which these conductors are fabricated has a tendency to revert to its natural state. For example, iron rusts or returns to its original oxide as it exists in its crude or natural state. This condition results in spots or blemishes (metallic) in the finished paper products.

Copper is a metal, which, in contrast to all others except the so-called precious metals, exists in its natural state. It is a staple metal, and when worked into form by man, does not deteriorate or corrode when exposed to natural elements or natural waters or soils. Other fabricated metals such as iron or zinc are mined as oxides and when exposed to natural forces revert to original crude state as rust or oxide.

Marine growth and slime from the inside of pipe lines is an ever present hazard of paper production. This can be eliminated entirely with the use of hard copper pipe, first, due to its toxic action in preventing growths and, second, in giving slime no anchorage for accumulation because of its smooth, hard interior. Actual mill tests have proven the above. Illustrated herewith are two pieces of pipe taken from a paper mill after eighteen months of service. A section of copper pipe was coupled into a wrought iron line, both new pipe, under identical conditions and for the same length of time. The test was a fair one and the results obtained show very clearly that copper is the ideal material for this use.

Owing to the fact that copper does not corrode or rust, the interior of copper pipe is always smooth, thereby eliminating the formation of scale and rust particles which otherwise would be dislodged and later appear as minute black specks and blemishes in the finished product. In addition, since there is no anchorage for slime, slime spots are also eliminated. This non-scaling quality of copper pipe admirably suits it for use in blow pits and screen rooms where the air is extremely moist and slightly acid, owing to these departments being in close proximity to the digester room and the acid plant. Since screen blow pits and flumes are usually open, copper is most desirable for the reason that no rust particles can possibly form on the exterior of the piping to eventually break loose through vibration and drop into the stock. From all indications the life of copper in these departments will be prolonged indefinitely while ferrous pipe (steel or wrought iron) of any sort must be replaced every two or three years. Maintenance costs are eliminated and cleaner stock results.



COPPER

Stock Piping

The features previously outlined make copper pipe equally suitable for use in stock lines conveying bleached as well as unbleached pulp. Where color changes are frequent on paper machines, the smooth uninterrupted interior with a complete absence of recess between pipe and fitting in a hard copper pipe installation facilitates ease in wash-ups.

Copper today is almost universally used in showers and as the new hard drawn, thin wall copper pipe combines light weight with necessary rigidity, it results in ease in handling when changing felts and wires.

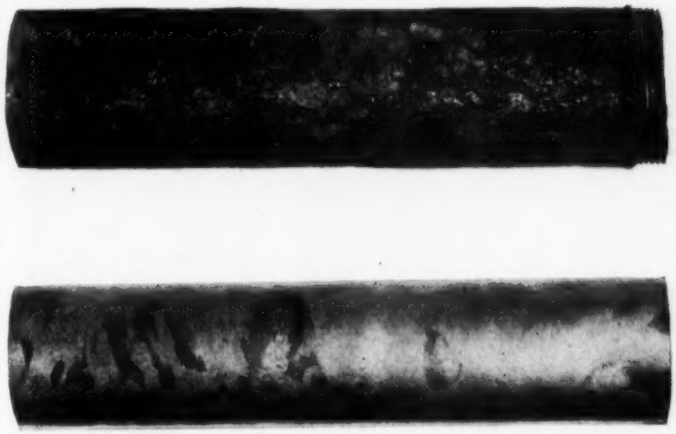
The new threadless fitting with hard thin wall copper pipe has an unique application in calender stack air blasts as it permits the directing of air upon any point on the calender rolls by merely slipping together the pipe and fittings. The absence of threads and heavy fittings in a hard copper pipe installation results in a maximum of flexibility while the smooth interior reduces friction and the light weight reduces the hazards in handling.

Other Uses

Since this particular copper piping application does not require room for wrench grip and swing, in its assembly, but is connected with a fitting very little larger than the pipe itself, by means of soldering, it can be used to good advantage in bearing cooling, instrument piping and general water piping around machines. Its neat, compact appearance, together with its space saving qualities and great

* Presented at the meeting of the Lake States Section of TAPPI, November 10, 1931, at Appleton, Wis.

[1] Engineer, Mueller Brass Co., Port Huron, Mich.



COPPER (SLIGHT TARNISH ONLY ON OUTSIDE)

strength made it ideal for this purpose.

Copper has always been considered the ideal material for many liquid conductors but until comparatively recent years its cost for this purpose was commercially prohibitive. This was chiefly owing to the fact that there had not yet been devised a method for connecting copper pipe that did not require a thread. To connect pipe by threading, its wall must be of sufficient thickness to permit a thread to be cut and this, of course, weakens it at this particular point, while the surplus thickness on the unthreaded length of the pipe then becomes simply excess material which has to be paid for originally, simply because a very small portion of it must be thick enough to carry the thread. Threading, is of course, the common method now in use for connecting wrought iron, steel, brass and copper pipe.

The problem to be overcome in putting copper on the market for ordinary commercial use from a cost standpoint, was to devise a method of connection that did not require a thread so that a lighter wall pipe could be used.

Further developments, however, were still necessary to place copper on a more competitive basis with iron. In the long run, even at a higher initial cost than iron, copper, owing to its long life and ability to retain its original nonclogging waterway, is, in reality, more economical in price. This fact, however, is often overlooked and it was realized that if copper was to be used to any great extent industrially, a further lowering in original cost was necessary. This final handicap has been overcome by the advent of what is known as streamline hard copper pipe and fittings. This new fitting is threadless and is designed to make a conveniently soldered connection to thin wall copper pipe. The soldering is done by the application of solder wire fed into conveniently placed openings in the fitting, heat being applied with a blow torch, and the natural law of capillary attraction. To make use of this

SECTIONAL VIEW OF JOINT

natural law of capillary attraction, close tolerances and clean surfaces are essential. It is interesting to observe that when the solder wire is fed in, it is drawn around evenly in the joint by capillary attraction and appears almost immediately at the outer edge of the fitting, thus indicating that a leak-proof joint has been completed. This joint, in contrast to all other means of connecting pipe, is actually much stronger than the pipe itself.

Another mechanical feature of this type of joint is the fact that the distance to which the copper pipe may be inserted in the fitting has been carefully determined and made positive by a shoulder in the fitting itself against which the pipe rests. This shoulder is the same thickness as the pipe wall, thus insuring a continuous uninterrupted waterway that cuts flow-resistance to a minimum and leaves no obstructions as a starting point for future accumulation.

This material is now available in nominal pipe sizes up to and including 8 inches and has been subjected to severe service tests in paper mills.

THIS SCREEN ROOM INSTALLATION OF HARD COPPER PIPE HAS BEEN IN SERVICE FOR OVER TWO YEARS. IT HAS BEEN CONSTANTLY SUBJECTED TO VIBRATION AND THE ACTION OF WHITE WATER AND ACID FUMES. IT HAS ENTIRELY ELIMINATED MAINTENANCE AND MAKES POSSIBLE CLEAN STOCK.

May Build Paper Mill at Jefferson, Tex.

JEFFERSON, Texas, December 12, 1931—That Jefferson is to become the center of a manufacturing area is one step nearer to realization with the announcement that Eastern capital has definitely committed itself on the question of establishing a paper mill in Marion County. While plans are indefinite, local financial interests say that the Eastern capitalists have reopened the matter voluntarily and negotiations are under way. Large acreage of cut-over lands with second-growth timber, good only for pulp, is available and easily accessible to Jefferson centering largely around the Jefferson & Northwestern Railroad tracks, originally established to serve a large sawmill in Jefferson. Water supply, fuel and other things that were impressive to the money interests were given as reasons for hope that the financiers will conclude the negotiations for a paper mill.

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Serve every Felt Purpose in an efficient and satisfactory way.

ENGLISH or BAKER WOVEN

Made in three, four, five and six ply—60" to 214" wide.

FITCHBURG DUCK MILLS
FITCHBURG, MASS.

For 87 Years Makers of Fine Faced Felts For Papermakers

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SODA ASH
CAUSTIC SODA

Liquid Chlorine
Contract or Spot Delivery
In tank cars and multiple unit cars.
Write for Prices

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NEW YORK

1864 1931

"EXCELSIOR" FELTS

for every grade of

PULP AND PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made the first endless paper machine felts manufactured in America.

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

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BULKLEY, DUNTON & COMPANY
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IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING DECEMBER 12, 1931

SUMMARY

Cigarette paper	9 bls., 982 cs.
Wall paper	32 bls., 32 cs.
Paper hangings	3 bls.
Painted paper	6 cs.
News print	5315 rolls
Printing paper	20 cs.
Wrapping paper	18 cs.
Decalcomania paper	22 cs.
Transfer paper	21 cs.
Colored paper	1 cs.
Drawing paper	2 cs.
Filter paper	79 bls., 25 cs.
Basic paper	106 rolls
Metal coated paper	58 cs.
Coated paper	59 cs.
Baryta coated paper	50 cs.
Gold coated paper	12 cs.
Surface coated paper	7 cs.
Tissue paper	12 cs.
Crepe paper	20 bls.
Cellophane paper	1 cs.
Veline paper	12 cs.
Writing paper	4 cs.
Envelopes	15 cs.
Paste board	112 cs.
Bristol board	9 cs.
Raw card	14 crates, 6 cs.
Card board	1 cs.
Card board boxes	8 cs.
Miscellaneous paper	6 bls., 42 cs.

CIGARETTE PAPER

Max Speigel & Son, Pres. van Buren, Genoa, 9 bls.
Champagne Paper Corp., Rochambeau, Havre, 20 cs.
American Tobacco Co., Rochambeau, Havre, 300 cs.
Gluckman & Strauch, Rochambeau, Havre, 6 cs.
Brown & Williamson Tobacco Co., Rochambeau, Havre, 6 cs.
——, Rochambeau, Havre, 2 cs.
Standard Products Corp., Ile de France, Havre, 124 cs.
Liggett & Myers Tobacco Co., Ile de France, Havre, 23 cs.
Brown & Williamson Tobacco Co., Ile de France, Havre, 11 cs.
Champagne Paper Corp., Ile de France, Havre, 30 cs.
American Tobacco Co., Ile de France, Havre, 450 cs.
Brown & Williamson Tobacco Co., Berengaria, Southampton, 10 cs.

WALL PAPER

Guaranty Trust Co., New York, Hamburg, 12 cs.
F. J. Emmerich, New York, Hamburg, 32 bls.
Universal Car Loading Co., New York, Hamburg, 20 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., American Farmer, London, 3 bls.

PAINTED PAPER

Rose Cumming, Rochambeau, Havre, 6 cs.

NEWS PRINT

Jay Madden Corp., Pres. Roosevelt, Hamburg, 103 rolls.
Jay Madden Corp., Dresden, Bremen, 662 rolls.
Bank of Montreal, Humberarm, Cornerbrook, 4550 rolls.

PRINTING PAPER

International Forwarding Co., E. Francqui, Antwerp, 19 cs.
P. C. Kuyper & Co., Laconia, Liverpool, 1 cs.

WRAPPING PAPER

E. Dietzgen & Co., Tomalva, Rotterdam, 18 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Laconia, Liverpool, 8 cs. (duplex); 5 cs. (simplex).
C. W. Sellers, New York, Hamburg, 9 cs.

TRANSFER PAPER

Fuchs & Lang Manfg. Co., Pres. Roosevelt, Hamburg, 4 cs.
F. L. Kramer & Co., Dresden, Bremen, 17 cs.

COLORED PAPER

S. Gilbert, Dresden, Bremen, 1 cs.

DRAWING PAPER

Devoe & Reynolds Co., Ile de France, Havre, 2 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., American Farmer, London, 3 cs.
H. Reeve Angel & Co. Inc., Berengaria, Southampton, 11 cs.
J. Manheimer, Berengaria, Southampton, 79 bls., 1 cs.
A. Giese & Son, New York, Hamburg, 10 cs.

BASIC PAPER

C. Bruning & Co., Tomalva, Rotterdam, 106 rolls.

METAL COATED PAPER

Winter Wolff & Co., E. Francaui, Antwerp, 2 cs.
Globe Shipping Co., Dresden, Bremen, 9 cs.
K. Pauli Co., New York, Hamburg, 34 cs.
Taub Hummell & Schnall, New York, Hamburg, 13 cs.

COATED PAPER

Gevaert Co. of America, E. Francqui, Antwerp, 57 cs.
W. J. Byrnes & Co., Berengaria, Southampton, 2 cs.

BARYTA COATED PAPER

Globe Shipping Co., Dresden, Bremen, 50 cs.

GOLD COATED PAPER

F. Murray Hill Co., Dresden, Bremen, 9 cs.
F. Murray Hill Co., New York, Hamburg, 3 cs.

SURFACE COATED PAPER

Phoenix Shipping Co., New York, Hamburg, 2 cs.
Globe Shipping Co., New York, Hamburg, 5 cs.

TISSUE PAPER

W. J. Byrnes & Co., Aurania, Southampton, 2 cs.
C. L. Voorhees, Laconia, Liverpool, 10 cs.

CREPE PAPER

H. Lange & Co., Dresden, Bremen, 20 bls.

CELLOPHANE PAPER

S. Stern Stiner & Co., American Farmer, London, 1 cs.

VELINE PAPER

C. L. Voorhees, Pres. van Buren, Genoa, 12 cs.

WRITING PAPER

Japan Paper Co., Rochambeau, Havre, 2 cs.
Di Piccioto, Ile de France, Havre, 2 cs.

ENVELOPES

——, Dresden, Bremen, 15 cs.

PASTE BOARD

D'Orsay Perfumeries, Inc., Rochambeau, Havre, 7 cs.
——, Dresden, Bremen, 65 cs.
D'Orsay Perfumeries, Inc., Ile de France, Havre, 16 cs.
Coty, Inc., Ile de France, Havre, 24 cs.

BRISTOL BOARD

Rempert & Co., E. Francqui, Antwerp, 9 cs.

RAW CARD

——, Dresden, Bremen, 14 crates, 6 cs.

CARD BOARD

Japan Paper Co., Aurania, Southampton, 1 cs.

CARD BOARD BOXES

Framerican Importing Co., Pres. van Buren, Marseilles, 8 cs.

MISCELLANEOUS PAPER

Champagne Paper Corp., Rochambeau, Havre, 20 cs.
C. H. Boulin, Ile de France, Havre, 5 cs.
Standard Products Corp., Ile de France, Havre, 1 cs.
Keller Dorian Paper Co., Ile de France, Havre, 8 cs.
Corn Exchange Bank & Trust Co., Tokai Maru, Osaka, 8 cs.
Kensington Wallpaper Co., New York, Hamburg, 6 bls.

RAGS, BAGGINGS, ETC.

Bank of N. Y. & Trust Co., Tomalva, Rotterdam, 34 bls. rags.
F. J. Fawcett, West Arrow, Antwerp, 16 bls. rags.
Castle & Overton, Inc., West Arrow, Antwerp, 344 bls. rags.
Darmstadt Scott & Courtney, West Arrow, Antwerp, 34 bls. bagging.
——, Tuscania, Glasgow, 4 bls. rags.
Chase National Bank, Tuscania, Glasgow, 18 bls. paper stock.
S. Birkenstein & Son, Aurania, Southampton, 114 bls. paper stock.
E. J. Keller Co. Inc., New York, ——, 41 bls. rags.
Irving Trust Co., Pipestone County, Havre, 33 bls. rags.
Bank of N. Y. & Trust Co., Estrella, Barcelona, 118 bls. bagging.
E. J. Keller Co. Inc., Exchester, ——, 184 bls. rags.

OLD ROPE

Banco Com'l Italiana Trust Co., Alberta, Trieste, 58 coils.

CASEIN

Kalbfleisch Corp., American Legion, B. Ayres, 521 bags.

WOOD PULP

Lagerloef Trading Co., Blankaholm, Tolkis, 702 bls. sulphite.
Lagerloef Trading Co., Blankaholm, Helsingfors, 3093 bls. sulphite; 260 bls. mechanical pulp.
——, Schenectady, Wiborg, 520 bls. sulphite, 103 tons.
Castle & Overton, Inc., Schenectady, Wiborg, 117 bls. sulphite, 23 tons.
Irving Trust Co., Dresden, Bremen, 1000 bls. wood pulp.
E. J. Keller Co. Inc., Grete, ——, 409 bls. wood pulp, 62 tons.

WOOD PULP BOARDS

Lagerloef Trading Co., Schenectady, Kotka, 475 bls., 39 tons.

PHILADELPHIA IMPORTS

WEEK ENDING DECEMBER 12, 1931

Lagerloef Trading Co., Blankaholm, Kemi, 6070 bls. sulphite.
Katzenstein & Keene, Inc., West Arrow, Antwerp, 182 bls. rags.
E. J. Keller Co. Inc., West Arrow, ——, 74 bls. rags.
——, Schenectady, Kotka, 780 bls. sulphate, 156 tons.
Lancaster News, Schenectady, Kotka, 51 rolls news print.
Lagerloef Trading Co., Schenectady, Kotka, 268 bls. wood pulp boards, 42 tons; 705 rolls wood pulp boards, 74 tons.
——, Schenectady, Wiborg, 3556 bls. sulphite, 661 tons.
Castle & Overton, Inc., Schenectady, Wiborg, 273 bls. sulphite, 54 tons.
Kelly & Co., Tokai Maru, Kobe, 50 bls. rags.

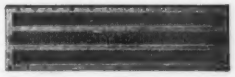
(Continued on page 52)

Union Screen Plate Company

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE

SCREEN PLATES FOR FLAT SCREENS
6 SLOTS—5 SLOTS—4½ SLOTS—4 SLOTS—PER INCH

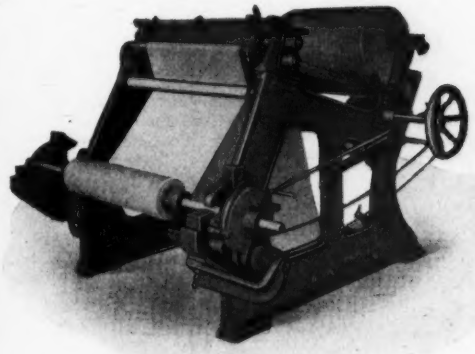


Old Plates Reclosed and Re-cut to Accurate Gauge
Rolled Phosphor Bronze and Copper Plates for Rotary Screens

Sole Manufacturers of the Union Witham Screen Plate Vat and Fastener

THE FALES SLITTER AND REWINDER MAKES A PERFECT ROLL AND THEY ACTUALLY DROP A PORT. NO INTER-WEAVING OR BINDING POSSIBLE

No Matter How Narrow the Slit Even Down to ⅛" the Result Is Always the Same



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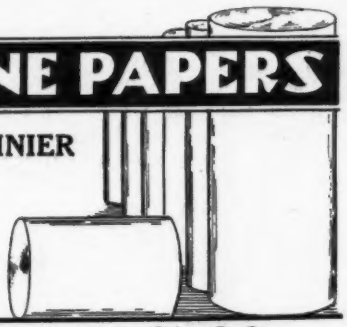
Let us solve your FELT Problems.



THE WATERBURY FELT CO.
SKANEATELES FALLS, N.Y.

Imports of Paper and Paper Stock

(Continued from page 50)

BALTIMORE IMPORTS

WEEK ENDING DECEMBER 12, 1931

Parsons & Whittemore, Inc., City of Hamburg, ——, 560 bls. sulphite.

Parsons & Whittemore, Inc., Wytheville, ——, 140 bls. straw pulp.

NEW ORLEANS IMPORTS

WEEK ENDING DECEMBER 12, 1931

Canal Bank & Trust Co., Giulia, Trieste, 45 bls. rags.

——, Giulia, Trieste, 20 coils old rope.

NEW LONDON IMPORTS

WEEK ENDING DECEMBER 12, 1931

Lagerloef Trading Co., Schenectady, Wiborg, 4415 bls. sulphate, 887 tons.

PORTLAND IMPORTS

WEEK ENDING DECEMBER 12, 1931

Lagerloef Trading Co., Blankaholm, Tolkis, 2259 bls. sulphite.

Lagerloef Trading Co., Blankaholm, Kemi, 4020 bls. sulphite.

Lagerloef Trading Co., Blankaholm, Rauma, 4532 bls. sulphite; 2545 bls. mechanical pulp.

Lagerloef Trading Co., Blankaholm, Hango, 1922 bls. sulphate.

Lagerloef Trading Co., Schenectady, Kotka, 650 bls. sulphate, 130 tons.

——, Schenectady, Kotka, 4760 bls. sulphate, 794 tons; 2985 bls. sulphite, 506 tons.

——, Schenectady, Wiborg, 2534 bls. sulphite, 424 tons.

Lagerloef Trading Co., Schenectady, Wiborg, 1530 bls. sulphite, 255 tons.

Castle & Overton, Inc., Schenectady, Wiborg, 514 bls. sulphite, 101 tons.

BOSTON IMPORTS

WEEK ENDING DECEMBER 12, 1931

Brown Bros. Harriman & Co., West Arrow, Antwerp, 49 coils old rope.

——, Schenectady, Kotka, 44 rolls news print; 1040 bls. sulphate, 208 tons; 525 bls. sulphite, 888 tons.

Lagerloef Trading Co., Schenectady, Wiborg, 4780 bls. sulphite, 800 tons.

Castle & Overton, Inc., Schenectady, Wiborg, 1926 bls. sulphite, 378 tons.

Atterbury Bros. Inc., Schenectady, Wiborg, 355 bls. sulphate, 59 tons.

W. A. Feinberg & Sons, Tokai Maru, Kobe, 15 bls. rags.

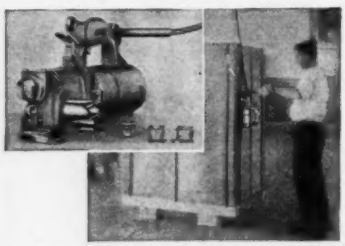
National Shawmut Bank, Tokai Maru, Kobe, 250 bls. rags.

Jordan Marsh Co., Pipestone County, Havre, 2 cs. writing paper.

Irving Trust Co., Pipestone County, Havre, 100 bls. rags.

New Electric Band Tightener

The Stanley Works, Box Strapping Division, New Britain, Conn., has just put on the market a portable electric band tightener and the following are some of its distinctive features: It materially speeds up strapping operations; It is designed and adapted for large shipping units which require more than ordinary amount of tensioning; it applies uniform and predetermined tension to each and every band; for instance, if a 1000 lb. pull is needed, the tool can be set for it, or if more or less tension is required adjustment either way is easily made, it eliminates entirely the back-breaking labor attached to tensioning with hand tools, and it is working just as fast and producing just as much work near the end of the day as it did in the first hour. Unlike manual labor it never tires. On quantity production jobs the Stanley Electric Band Tightener offers great opportunities for fast and economical work. The Stanley Works will be glad to demonstrate this new equipment wherever requests are made for it.



Rebuilding Board Machine at Thorold

THOROLD, Ont., December 14, 1931—The Beaver Wood Fibre mill is a busy plant these days. No. 2 board machine is being rebuilt to make high grade special board for the Canadian trade. This machine trims 112 inches and carries seven cylinders. The changes are extensive as they include overhauling and rebuilding the screens, sizing rolls and calender stacks, while five Dilts Improved New Type beaters have been installed to insure proper preparation of the stock for this high quality board.

It is expected the machine will be ready for operation on January 1, the work being pushed with great energy because of the pressure on the mill to get this machine into production.

John Ball has been selected as resident manager of the plant which is a Division of the Certain-Teed Products chain of mills.

C. L. Allen 50 Years With Norton Co.

WORCESTER, Mass., December 14, 1931.—A dinner in honor of Charles L. Allen, president and general manager of the Norton Company, commemorating the completion of 50 years of leadership in the company, was given at the Worcester club, recently. The occasion, notable in itself, was made the more significant by international recognition. President Herbert Hoover sent a telegram of congratulation and former President Calvin Coolidge also sent a letter to his friend.

King Gustaf V of Sweden (through Olof H. Lamm of New York, consul general for Sweden to the United States, made Charles L. Allen a Knight of the first class of the Order of Vasa, in recognition of his great contribution to the development of friendly relationship between the United States and Sweden. The honor has been conferred upon very few citizens of the United States who were not of Swedish descent.

Mr. Allen was presented with a trophy in the form of a beautiful solid silver tray and inkwell designed and executed by a famous silversmith.

There were present 80 officials of the company, including the managers of branch offices in other cities. Aldus C. Higgins, treasurer of the company, was the toastmaster.

Price Bros. Pass Dividend

MONTREAL, Que., December 14, 1931—Unsatisfactory conditions in the news print industry in Canada are reflected in the decision of the directors of Price Brothers, Ltd., to omit the quarterly dividend on the common stock. The dividend was reduced to an annual basis of 1 per cent three months ago, from 2 per cent, at which rate dividends had been paid regularly since the incorporation of the present company eleven years ago.

Japanese Paper Production

WASHINGTON, D. C., December 14, 1931—Paper and board production by the mills of the Japanese Paper Manufacturers' Association during the month of September totaled 55,288 short tons as against 56,746 tons for the corresponding month of last year. Production for the nine months period ending September this year was 502,182 tons compared with 513,348 tons for the same period of last year.

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GIANT The Standard of the World for 60 Years

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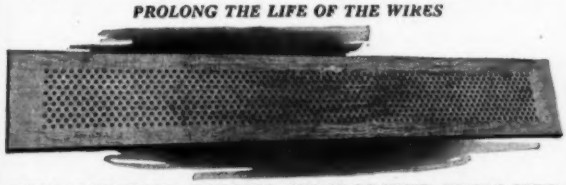

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THE MOORE & WHITE COMPANY
Paper Machinery Builders Philadelphia, U. S. A.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, December 16, 1931.

The high light in the paper market during the past week was the announcement by fine writing paper manufacturers of a reduction in the price of rag content bond from 10 to 17 per cent.

Interest in the news print market considerably subsided after the flurry of the past two weeks, with prices stabilized by the International Paper Company and other large American and Canadian producers on a basis of $53 per ton on contract news print at New York and Chicago.

A seasonal decline in most varieties of paper usual at this period of the year was reported during the week. Book papers probably maintained the best average. Coarse papers, tissues and board were without exceptional features.

Mechanical Pulp

There was no change reported in the condition of the ground wood pulp market during the week, with the exception of a slight weakening in price. Both domestic and imported mechanical pulp are in fairly satisfactory demand. Accumulations are not excessive due to curtailment in production.

Chemical Pulp

The demand in the chemical pulp market is considerably below par for this time of the year, but it has been reported that some orders for substantial tonnages have been placed within the past week, but at lower prices than quoted a week ago.

Old Rope and Bagging

The old rope market continues quiet. Demand for domestic and foreign old manila rope is listless. Prices are about the same. The bagging market is dull, with a slight change reported in price. Foreign gunny No. 1 is now quoted at from $1.10 to $1.20, while domestic is selling at from $1.15 to $1.25.

Rags

There is comparatively little demand in the rag market. Paper mill demand for the various grades of cotton rags is dull as the mills are operating on reduced schedules. Domestic rag prices remain unchanged, while quotations on foreign rags are slightly lower.

Waste Paper

The usual seasonal dullness at this time of the year is evident in the waste paper market, with a number of the mills closed down. Not much buying is being done in some quarters on account of stock inventory. The falling off in demand is reflected by the prices.

Twine

No changes have been reported in the local twine market. Volume of sales are fairly persistent due to the holiday demands. Prices remain as previously quoted.

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 9, 1931.—The Government Printing Office has received the following bids for 40,000 pounds of laminated binders board: Bird & Son, Inc., at $49.20 per ton; The Whitaker Paper Company, $42.00; and the La Boiteaux Company, $37.50.

The following bids were also received for 1,500 sheets of 24 x 36 manila tissue paper: William Mann Company, $4.00; Wilkinson-Grey Company, $3.75; R. P. Andrews Paper Company, $3.75; Charles G. Stott & Company, Inc., $3.00; The Whitaker Paper Company, $3.78; Reese & Reese, $2.30 per ream; and Import Paper Company, $3.75.

The Nashua Gummed and Cardboard Company has been awarded the contract for furnishing the Government Printing Office with 2,100 sheets of 20 x 25 blue gummed paper at $10 per M sheets, bids for which were received on December 2.

The R. P. Andrews Paper Company will furnish 6,250 pounds ($50,000 sheets) of 20 x 25, 50 per cent rag gray laid cover paper at 10.4 cents per pound and the Consolidated Paper Company will furnish 40,000 pounds of best grade binders board at 4.2 cents per pound. Bids for these items were received on November 23.

Barton, Duer & Koch Paper Company will furnish 5,000 sheets of 22 x 28 gray photo mount board at $47.95 per M sheets and the R. P. Andrews Paper Company will furnish 1,300 sheets (100 pounds) of 25 x 26 tangerine stippled finish box cover paper at $15 per ream. Bids for these items were received on November 23.

The Whitaker Paper Company will furnish 7,388 pounds (75,000 sheets) of 18½ x 35½, No. 56, 100 per cent rag white recording instrument chart paper at 17.5 cents per pound and the Cauthorne Paper Company will furnish 1,000 pounds of red stereotype molding paper in 24 inch rolls at 11 cents per pound. Bids for these items were received on November 16.

Ernest H. Neblett Dead

RICHMOND, Va., December 14, 1931.—Ernest H. Neblett, Chairman Southeastern Division of American Pulp and Paper Superintendents Association, and a recognized authority on blotting and absorbent papers, died at his residence 2315 Rosewood avenue, Richmond, on December 6, 1931.

Mr. Neblett entered paper manufacturing upon leaving school, as an apprentice, with Dill & Collins, and later became associated with the District of Columbia Paper Manufacturing Company. When the Standard Paper Manufacturing Company began operations in 1902, Mr. Neblett returned to his home city and became back tender under Superintendent W. J. Stiles. In 1920 he was promoted to superintendent of Mill No. 1 and specialized on blotting and absorbent papers. In 1930 Mill No. 2 was added to his supervision. He enjoyed a wide acquaintance, both among the mill men and in Richmond.

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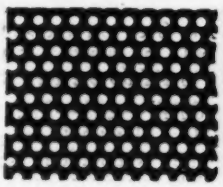

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TOILET PAPER MACHINES
For making Toilet and Paper Towel Rolls
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For Making Wire-Stitched Toilet Tubes

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, December 16, 1931.

BLANC FIXE.—The position of the blanc fixe market remains unchanged. Prices are holding to schedule. The pulp is quoted at from $42.40 to $45 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—Conditions in the bleaching powder market are fairly satisfactory. Contract shipments are moving in seasonal volume. Prices remain unaltered. Bleaching powder is quoted at from $1.75 to $2 per 100 pounds, in drums at works.

CASEIN.—No changes are reported in the casein market. Domestic standard ground is quoted at 7½ cents and finely ground at 8 cents per pound. Argentine standard ground is selling at 8½ cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Steadiness prevails in the caustic soda market. Demand is fair. Solid caustic soda is quoted at from $2.50 to $2.55 and the flake and the ground at from $2.90 to $2.95 per 100 pounds, in large drums at works.

CHINA CLAY.—Conditions in the china clay market remain unchanged. No price changes. Imported china clay is quoted at from $11 to $15 per ton. Domestic paper making clay is selling at from $7 to $11 per ton, at mine.

CHLORINE.—The demand in the chlorine market is fair. Supplies are moving into consumption in good volume. Prices are generally holding to schedule. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market remains quiet and prices are unchanged. The grades of gum rosin used in the paper mills are now quoted at from $3.90 to $4.05 per 280 pounds, in barrels, at works. Wood rosin is selling at $3.90 per 280 pounds, in barrels, on dock.

SALT CAKE.—Steady undertone in the salt cake market. Prices unaltered. Salt cake is quoted at from $15 to $16; chrome salt cake at from $14 to $15 per ton, in bulk, at works. Imported salt cake is selling at from $15 to $15.50 per ton, ship side.

SODA ASH.—The trend of the soda ash market is steady. Shipments are going forward to the mills in good volume. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1; in bags, $1.25; and in barrels, $1.38.

STARCH.—Paper mill demand for starch is moderately active with most of the business transacted being routine. Prices are easier. Special paper making starch is now quoted at $2.62, in bags; and at $2.89, in barrels, per 100 pounds, at works.

SULPHATE OF ALUMINA.—Conditions in the sulphate of alumina market are steady. Prices are holding to schedule. Commercial grades are quoted at from $1.25 to $1.49; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The position of the sulphur market is unchanged. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—No changes were reported in the talc market during the past week. Domestic talc is quoted at from $14 to $18 per ton, in bulk, at mine; imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	38.00
Bonds	5.00	@	53.25
Index	6.00	@	12.00
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	6.75	@	11.00
Book, Cased—			
S. & S. C.	5.25	@	—
M. F.	5.00	@	—
Coated and Enamel	6.25	@	9.75
Lithograph	6.75	@	11.25
Tissues—Per Ream—			
White No. 1	.65	@	.70
Anti-Tarnish M. G. only	.65	@	.70
Colored	.70	@	.90
White No. 2	.55	@	.60
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middies	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¾	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¾	@	—

(Delivered New York)

News, per ton—			
Rolls, contract	57.00	@	—
Rolls, spot	57.00	@	—
Sheets	62.00	@	—
Side Runs	42.00	@	46.00
Kraft—			
No. 1 Domestic	4.50	@	5.75
No. 2 Domestic	3.00	@	4.25
Southern	2.75	@	4.00
Imported	6.00	@	7.00
Boards—per ton—			
News	24.00	@	26.00
Chip	24.00	@	26.00
Binders' Boards	62.00	@	70.00
Standard 85 Test Liner	32.50	@	35.00
Sgl. Mla. Ll. Chip	35.00	@	40.00

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	22.00	@	24.00
Dry	22.00	@	24.00

(F. o. b. Mill)

No. 1 Domestic	25.00	@	30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.10	@	3.50
Easy Bleaching	1.60	@	1.75
No. 1 strong unbleached	1.50	@	1.75
Mitscherlich unbleached	1.55	@	1.75
No. 2 strong unbleached	1.40	@	1.50
No. 1 Kraft	1.50	@	1.75
No. 2 Kraft	1.40	@	1.50
Sulphate—			
Bleached	2.35	@	2.50

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	2.00	@	4.00
Easy Bleaching	1.75	@	1.90
News	1.50	@	1.65
Mitscherlich	2.40	@	2.55
Kraft (Domestic)	1.60	@	2.75

(Delivered Paper Mills)

Soda Bleached	2.75	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.50	@	7.00
New White, No. 2.	5.50	@	6.00
Silesias No. 1	5.25	@	5.50
New Unbleached	7.00	@	7.50
New Blue Prints	4.00	@	4.50
New Soft Blacks	3.50	@	4.00
Blue Overall	5.00	@	5.25
Fancy	3.00	@	3.50
Washables	2.75	@	3.00
Mixed Khaki Cuttings	3.50	@	4.00
Pink Corset Cuttings	5.00	@	5.50
O. D. Khaki Cuttings	4.50	@	4.75
Men's Corduroy	3.00	@	3.50
New Mixed Blacks	3.00	@	3.25

Old Rags

White, No. 1—			
Repacked	5.25	@	5.75
Miscellaneous	4.25	@	4.75
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.30	@	2.50
St. Soiled, White	1.50	@	1.75
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.65	@	1.85
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.25	@	1.30
No. 1	1.25	@	1.30
No. 2	.90	@	1.00
No. 3	.70	@	.80
No. 4	.65	@	.70
No. 5A	.50	@	.60

Foreign Rags

New Rags

New Dark Cuttings	1.50	@	1.60
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	3.80	@	4.00
Light Flannelettes	4.25	@	4.50
Unbleached Cuttings	6.00	@	6.25
New White Cuttings	4.75	@	5.00
New Light Oxfords	4.00	@	4.25
New Light Prints	2.25	@	2.50

Old Rags

No. 1 White Linens	5.75	@	6.00
No. 2 White Linens	5.00	@	5.25
No. 3 White Linens	3.50	@	4.00
No. 4 White Linens	2.00	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.50
No. 3 White Cotton	2.50	@	3.00
No. 4 White Cotton	1.45	@	1.60
Extra Light Prints	1.90	@	2.10
Ord. Light Prints	1.60	@	1.75
Med. Light Prints	1.40	@	1.55
Dutch Blue Cottons	1.50	@	1.60
French Blue Linens	2.25	@	2.40
German Blue Linens	2.00	@	2.10
German Blue Cottons	1.35	@	1.40
Checks and Blues	1.25	@	1.30
Lindsay Garments	.75	@	.80
Dark Cottons	.70	@	.75
Old Shopperies	.55	@	.60
New Shopperies	.60	@	.65
French Blues	1.40	@	1.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.10	@	1.20
Domestic	1.15	@	1.25
Wool Tares, light	1.05	@	1.10
Wool Tares, heavy	1.10	@	1.15
Bright Bagging	1.05	@	1.10
Small Mixed Rope	.90	@	1.00
Manila Rope—			
Foreign	1.65	@	1.75
Domestic	1.75	@	1.90
New Burlap Cut	1.70	@	1.80
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	2.55	@	2.75
Hard, white, No. 2	1.90	@	2.00
White envelope cuttings	2.05	@	2.15
Soft, white, No. 1	1.70	@	1.80
Flat Stock—			
Stitchless	.70	@	.80
Overissue Mag	.70	@	.80
Solid Flat Book	.60	@	.70
Crumpled No. 1	.45	@	.50
Solid Book Ledger	1.75	@	1.85
Ledger Stock	.60	@	.70
New B. B. Chips	.20	@	.30
Manilas—			
New Env. Cut	1.75	@	1.85
New Cuttings	1.40	@	1.50
Extra No. 1 old	1.05	@	1.15
Print	.45	@	.50
Bogus Wrapper	.45	@	.50
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	1.00	@	1.10
News—			
No. 1 White News	1.60	@	1.65
Strictly Overissue	.35	@	.45
Strictly Folded	.25	@	.30
No. 1 Mixed Paper	.15	@	.23
Common Paper			Nominal

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Half-Round Stuff Chests made of 3-inch Genuine Red Gulf Cypress with heavy Yellow Pine bracing. Built and erected in the Frank Smith Paper Mill at Middletown, Ohio.

The Hauser-Stander Tank Company
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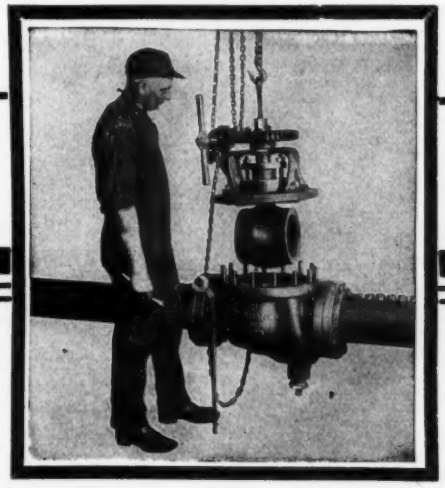
Wood tanks for every purpose in the paper mill, accurately made and only the best material and workmanship are used in their construction

FAIRBANKS NEW "SPHERO" VALVE



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Lever type in sizes ¼-in. to 4-in. Gear type in sizes 4-in., 6-in. and 8-in. For 200 Pounds Steam Working Pressure.

Write for Bulletin V-103

THE FAIRBANKS COMPANY
BOSTON NEW YORK PITTSBURGH
Factory: Binghamton, N. Y. *Distributors Everywhere*

Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.13	@	—
No. 2	.11	@	—
Tube Rope—			
4-ply and larger	.09	@	—
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine			
Balls	.07	@	—
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.21	@	.22

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¼
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manilt	.04	@	.04½
No. 1 Kraft	4.50	@	5.00
Southern Kraft	3.00	@	3.25
No. 2 Kraft	3.00	@	3.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	57.00	@	—
Sheets	62.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
.85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	1.95	@	2.05
No. 1 Soft White	1.80	@	1.90
Ledger & Writings	.60	@	.70
Solid Books	.60	@	.70
Blanks	1.40	@	1.55
Krafts	1.15	@	1.25
New Kraft Cuts	1.30	@	1.45
Manila Env. Cuts	1.40	@	1.50
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.50
Old Newspapers—			
No. 1	.35	@	.45
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.25	@	.30
No. 2	.25	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.07	@	.40
Writings—			
Superfine	.12	@	.18
Extra fine	.16	@	.22
Fine	.15	@	.26
Fine, No. 2	.12	@	.25
Fine, No. 3	.07	@	.20
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.07	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03½	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¾
Southern Kraft No. 1	—	@	.04
Southern Kraft No. 2	—	@	.03¾
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	30.00	@	32.00
Chip Board	25.00	@	27.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	63.00	@	65.00
Carload lots	62.00	@	67.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06	@	.06½
New White, No. 2	.05	@	.05½
Light Silesias	.05	@	.05½
Silesias, No. 1	.06	@	.08
Black Silesias, soft	.05	@	—
New Unbleached	.06	@	.06½
Washable, No. 1	.02½	@	.03
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02	@	.02½
New Blue	.02	@	.02½
Fancy	.03	@	.03¼
New Black Soft	.03	@	.03½
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O.D.	.04½	@	.05
No. 2 Mixed	.03½		.04
Corduroy	.02½	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.03	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.25	@	2.75
M. G.	4.50	@	—
Thirds and Blues—			
Miscellaneous	1.25	@	1.50
Repacked	1.75	@	2.00
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.25	@	2.50
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.50
No. Hard White	2.00	@	2.25
No. 1 Soft White	1.75	@	2.00
No. 2 Soft White	1.40	@	1.50
No. 1 Mixed	.75	@	.80
No. 2 Mixed	.50	@	.55
Solid Ledger Stock	1.35	@	1.40
Writing Paper	.80	@	1.00
No. 1 Books, heavy	.70	@	.75
No. 2 Books, light			Normal
No. 1 New Manila	1.60	@	1.75
No. 1 Old Manila	1.25	@	1.30
Print Manila	.50	@	.55
Container Manila	.40	@	.45
Old Kraft	1.10	@	1.20
Common Paper	.30	@	.40
No. 1 Mixed Paper	.35	@	.45
Straw Board, Chip	.35	@	.45
Binders Board, Chip	.35	@	.45
Corrugated Board	.45	@	.50
Overissue News	.50	@	.55
Old Newspaper	.30	@	.35

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag Content	.15	@	.30
All Rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	—	@	.03
(F. o. b. Boston)			
Southern Kraft	—	@	.03
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print, rolls	—	@	56.50
Straw Board, rolls	.009	@	52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	27.50	@	30.00
Chip Board	—	@	25.00
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	—	@	35.00
Single White, Patent Coated News Board—			
Binder	52.50	@	60.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	67.50	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.50
No. 2 Hard White	2.25	@	2.50
No. 1 Soft White	1.75	@	2.00
No. 2 Mixed	.50	@	.55
No. 1 Mixed	.75	@	.85
Solid Ledger Books	1.75	@	2.00
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.65	@	.75
No. 1 Books, light	—	@	.45
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Kraft No. 1	.85	@	1.05
Manila	.90	@	1.00
No. 1 Mixed Paper	.20	@	.22½
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers	.27½	@	.32½
Box Board, Chip	.20	@	.25
Corrugated Boxes	.37½	@	.47½

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.15
Domestic	1.40	@	1.50
Manila Rope—			
Foreign	1.50	@	1.75
Domestic	1.75	@	2.00
Transmission Rope	1.25	@	1.40
Mixed String	.35	@	.40
Jute Rope	1.00	@	1.15
Jute Carpet Threads	.75	@	.90
Bleachery Burlap	2.50	@	2.75
No. 1 Scrap Burlap	1.10	@	1.25
Scrap Sisal	1.35	@	1.45
Scrap Sisal for shredding	1.50	@	1.60
Wool Tares, heavy	1.25	@	1.30
New Burlap Cutting	1.50	@	1.75
Australian Pouches	2.00	@	2.25
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	.90	@	1.05
Bagging No. 2	.50	@	—
No. 1 Burlap	—	@	3.50

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.06½	@	.07
New White No. 2	—	@	.06
Silesias No. 1	.06	@	.06¼
New Black Silesias	.02½	@	.02¾
New Unbleached	—	@	.08
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades—			
Blue Overalls	.05	@	.06
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	—	@	4.00
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.50	@	2.75
Thirds and Blues—			
Repacked	1.60	@	1.80
Miscellaneous	1.00	@	1.20
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	.48	@	.53
No. 2	.43	@	.48
No. 3	.38	@	.43

Foreign Rags
(F. o. b. Boston)

Dark Cottons	—	@	.70
New No. 1 White Shirt Cuttings	6.50	@	6.75
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.55	@	1.65
Old Linsey Garments	.80	@	.90

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¾	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.11¾	@	—
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (Carloads)	6.65	@	—
No. 3 M. F. (Carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.60	@	—
White Wrap	5.10	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.60	@	—
Fiber	5.60	@	—
Kraft, M. F.	5.98	@	—
Kraft No. 2	5.60	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	56.50	@	57.00
Sheets	61.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	44.00	@	—
Sulphite, bleached	62.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.60	@	—
Soft White	2.40	@	—
White Blk. News	1.40	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	1.05	@	—
Ledgers and Writings	—	@	—
Manilas—			
New Manila Cut	1.40	@	—
Printed Manilas	.50	@	—
Kraft	1.65	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.45	@	—
No. 1 Mixed Paper	.35	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¾

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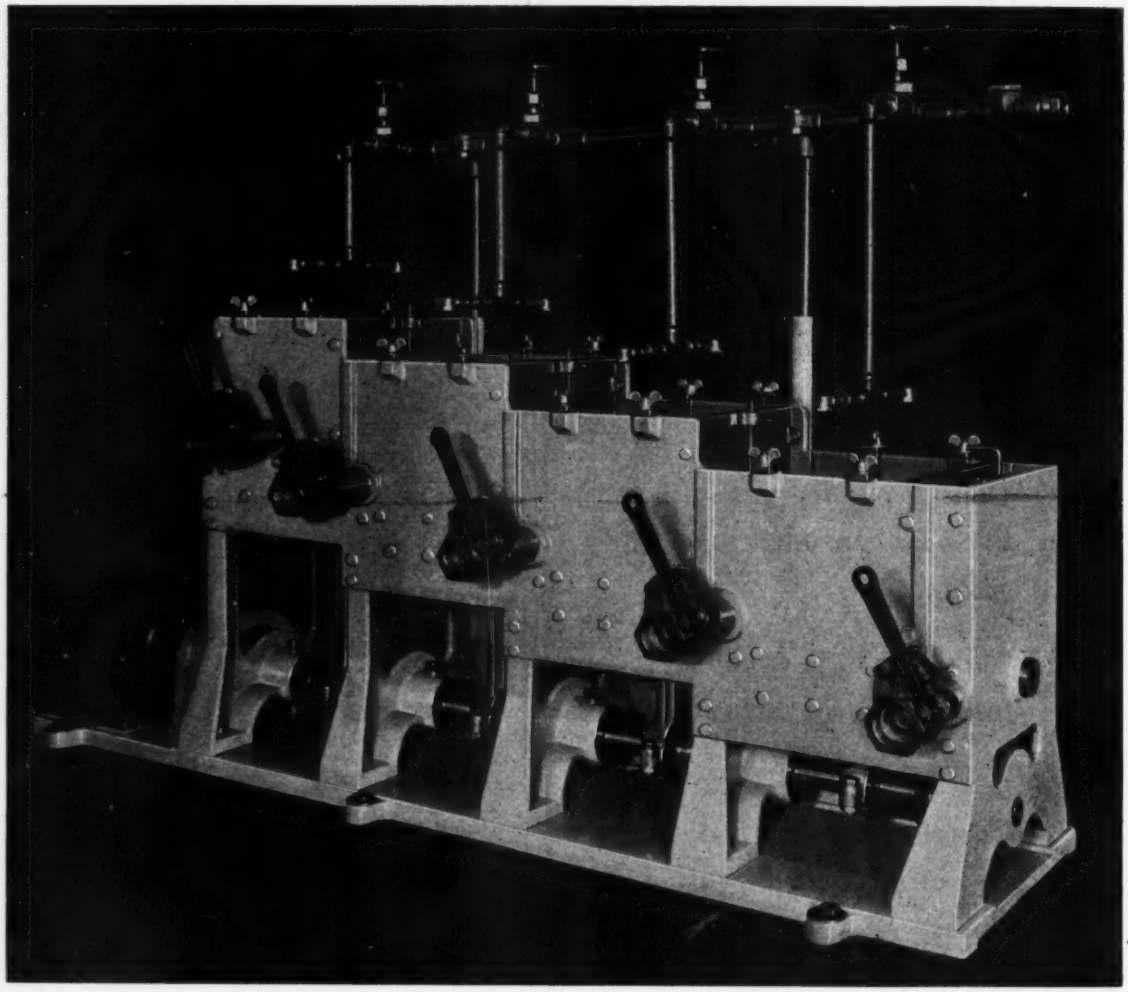

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